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SEVERE FEBRILE IODISM DURING THE TREATMENT OF HYPERTHYROIDISM

W. HALSEY BARKER, M.D.

AND

W. BARRY WOOD JR., M.D.

BALTIMORE

Iodine has been used in the treatment of exophthalmic goiter for more than a hundred years. It was not until 1923, however, that Plummer [1] first presented convincing evidence of the value of medication with iodine as an adjunct to surgery in the treatment of hyperthyroid patients. Today the administration of iodine in the form of compound solution of iodine (Lugol's solution) or potassium iodide is employed in a routine manner as a preoperative measure by the majority of physicians and surgeons both in this country and abroad. Properly used, iodine appears to effect striking clinical improvement, as manifested by a diminution of the nervous symptoms, a fall in the basal metabolic rate, a decrease in pulse rate and frequently an appreciable gain in weight. As a result of the alleviation of many of the signs and symptoms of the disease the patient is better prepared to withstand the shock of a major surgical procedure, and the danger of a serious postoperative "thyroid crisis" is materially reduced.

In view of the widespread use of iodine in the treatment of hyperthyroidism it is surprising how few unfavorable reactions to this form of therapy have been reported. A small proportion of patients appear to be iodine resistant in that they fail to respond to the administration of iodine in the usual manner. Lerman [2] found the mortality to be higher in the iodine-resistant cases than in the responding cases, but he felt that other factors such as advanced age and cardiac disease were equally important in raising the mortality rate of this group. There was no evidence to suggest that the iodine per se had exerted any deleterious action likely to increase the operative risk in these cases. Aside from iodine resistance, which may more properly be termed an indifferent reaction to iodine than an unfavorable one, there is little to be found in the literature concerning actually harmful reactions to iodine in the treatment of hyperthyroidism. In their original report of 600 cases of exophthalmic goiter treated with compound solution of iodine, Plummer and Boothby [1] state that no patient was made worse by iodine therapy. The many papers that subsequently confirmed Plummer's original observations of the beneficial effects of iodine therapy furnish no instance of a severe toxic reaction to iodine. In his recent review of diseases of the thyroid gland, Boothby [3] reported that more than 9,000 patients with true exophthalmic goiter had received ten drops of compound solution of iodine three times a day at the Mayo Clinic. He quotes Plummer as stating that neither he nor his associates had seen a single instance in which the reaction of the patient could be interpreted as indicating that this was too large a dose as far the the syndrome of exophthalmic goiter was concerned, although extraneous effects, such as a cutaneous rash, occasionally developed. Two recent textbooks on diseases of the thyroid gland [4] make no mention of idiosyncrasy to iodine. Bram [5] states that about 15 per cent of patients with exophthalmic goiter have an idiosyncrasy to iodine and become worse under its use; he gives no details as to the manifestations of this idiosyncrasy. Means,[6] in discussing the possible ill effects of iodine, remarks that in the doses used salivation is seldom troublesome. He adds that in an occasional hypersensitive person a characteristic acneform or pustular rash may develop but concludes that thyrotoxic patients are not more susceptible to iodine rash than any other group of patients. Means suggests that the giving of iodine may render thyrotoxic patients more prone to infections of the respiratory tract on the basis of the high incidence of sore throats among the treated patients, especially during the winter. He encountered no other difficulties in the routine use of iodine over a period of thirteen years.

Since we have been unable to find in the literature any detailed report of a febrile reaction to iodine during the treatment of hyperthyroidism, it seemed to us worth while to describe seven instances (including one fatal case) of severe febrile iodism that have been observed in hyperthyroid patients in the Johns Hopkins Hospital during the past ten years.

CASE MATERIAL

This report is based on a series of 400 hyperthyroid patients who were treated with some form of iodine medication in either the medical service or the surgical service [7] of the Johns Hopkins Hospital during the past ten years. Significant data derived from an analysis of this series are summarized in table 1.

From the department of medicine and the medical clinic of the Johns Hopkins University Medical School and Hospital.

1. Plummer, H. S.: Results of Administering Iodine to Patients Having Exophthalmic Goiter, J. A. M. A. **80**: 1955 (June 30) 1923. Plummer, H. S., and Boothby, W. M.: The Value of Iodine in Exophthalmic Goiter, Coll. Papers, Mayo Clin. **15**: 565-576, 1923.

2. Lerman, Jacob: Iodine Response and Other Factors in Their Relation to Mortality in Thyrotoxicosis, New England J. Med. **217**: 1041-1044 (Dec. 23) 1937.

3. Boothby, W. M.: Disease of the Thyroid Gland: An Interpretive Review of Progress Toward the Solution of the Problem, Arch. Int. Med. **56**: 136-206 (July) 1935.

4. Joll, C. A.: Diseases of the Thyroid Glands with Special Reference to Thyrotoxicosis, London, William Heineman Ltd., 1932. Hertzler, A. E.: Diseases of the Thyroid Gland, ed. 3, St. Louis, C. V. Mosby Company, 1935.

5. Bram, Israel: Exophthalmic Goiter and Its Medical Treatment, ed. 2, St. Louis, C. V. Mosby Company, 1936, pp. 324, 327.

6. Means, J. H.: The Thyroid and Its Diseases, Philadelphia, J. B. Lippincott Company, 1937, pp. 355-356.

7. The department of surgery gave its permission for the inclusion of cases from the surgical service.

It is of interest that the ratio of females to males in this series is 3:1, bearing out the observations of others that the incidence of hyperthyroidism is considerably higher in the female sex. The ratio of white patients to Negro patients is also 3:1, but this does not give a fair picture of the relative frequency of the disease in the two races since the number of white patients admitted to the hospital each year is considerably larger than that of Negro patients.

By arranging the patients according to their ages, it becomes apparent that nearly 90 per cent are evenly distributed in two groups: those between 21 and 40 years of age and those between 41 and 60 years of age. There were only twenty-eight patients in the series less than 21 years of age and twenty patients more than 60 years of age.

All patients received iodine medication for three days or longer, and the patients have been further grouped according to the duration of iodine therapy. The majority of patients were given iodine for periods of from eight days to three weeks. However, fifty-one patients took iodine for four weeks or longer; one patient took the drug continuously for over a year without any untoward effects. The oral route of

TABLE 1.—*Analysis of 400 Cases of Hyperthyroidism Under Treatment*

Sex and race	Male 100 (25%)			Female 300 (75%)	
White	84 (21%)			216 (54%)	
Negro	16 (4%)			84 (21%)	
Age groups	Under 21 yrs.	21-40 yrs.		41-60 yrs.	Over 60 yrs.
	28	179		173	20
Duration of iodine therapy	3-7 Days	8-14 Days	15-21 Days	22-28 Days	29+ Days
	32	195	96	26	51
Operation	Subtotal Thyroidectomy 358			No Operation 42	
	Survived	Died		Survived	Died
	348 (97.2%)	10 (2.8%)		40	2

administration was employed in all cases. The iodine was given in the form of compound solution of iodine (iodine 5 Gm., potassium iodide 10 Gm. and distilled water to make 100 cc.) in 345 cases and as a saturated aqueous solution of potassium iodide (1 Gm. to 1 cc.) in forty-four cases; the remaining eleven patients received both compound solution of iodine and simple potassium iodide at different times during their hospital stay. The daily dose of compound solution of iodine ranged from 0.3 to 6 cc., the usual dose being 3 cc. a day. The dose of potassium iodide varied between 0.3 and 2 Gm. a day; the smaller dose was used for the majority of patients so treated.

Of the 400 patients 358 were subjected to subtotal thyroidectomy, with ten deaths, an operative mortality of 2.8 per cent. Forty-two patients had no operation performed; two of these patients died during their stay in the hospital.

The temperature charts of all 400 patients were reviewed for the presence or absence of fever, especially during the period of iodine therapy. We have made a particularly careful study of the records of those patients who had fever in an effort to determine the cause of the fever. If the patient had an acute streptococcic sore throat, rheumatic fever, a severe infection of the urinary tract, bacteremia or any other acute infection, such a complication was accepted as the most likely cause of the fever and the case was discarded, even though the fever may have developed during a course of iodine medication. After all such cases had been eliminated from consideration there remained seven cases in which febrile reactions of considerable severity developed during a period of iodine therapy for no accountable reason other than idiosyncrasy to the drug. The time relationship of the administration of iodine to the onset of the fever in addition to other symptoms suggestive of iodism furnished convincing evidence that the fever was a manifestation of a reaction to iodine. These seven cases constituted 1.75 per cent of the entire series.

REPORT OF CASES

CASE 1.—*History.*—T. B., a schoolgirl aged 15, admitted to the medical service Aug. 8, 1930, complained of nervousness and a lump in her neck. She had always been considered a nervous child and it had been noted that she had tachycardia at an early age. The goiter was first noticed twenty months before admission. For eight months she had been quite hoarse; a tremor of her fingers developed and she lost 10 pounds (4.5 Kg.). She had never menstruated. There was no history of iodine medication prior to admission.

Examination.—The temperature was 99.4 F., the pulse 120, the respiratory rate 24 and the blood pressure 130 systolic, 70 diastolic. She was tall, thin and undeveloped (85 pounds [38.6 Kg.]); she appeared frightened and cried easily. She was very restless and perspired freely. There was a fine tremor of the tongue and fingers. The Stellwag sign was present but none of the other eye signs of hyperthyroidism were noted. The thyroid was diffusely enlarged and a soft bruit was audible over the gland. The heart was not enlarged. A rough systolic murmur was heard over the conus.

The blood count showed no anemia; the white blood cell count was 8,700 with polymorphonuclears 45 per cent, eosinophils 0, basophils 2 per cent, lymphocytes 51 per cent, monocytes 2 per cent. The urine was normal. The Wassermann reaction was negative. The basal metabolic rate was + 16.

Course.—It was apparent that the girl was suffering from mild hyperthyroidism. For this reason she was given compound solution of iodine 3 cc. a day and phenobarbital as a sedative. The subsequent course of events is depicted in figure 1. Although the basal metabolic rate soon fell to 0, the pulse rate remained elevated. Seventeen days after the initial dose of iodine a slight fever developed which reached a peak of 101 F. four days later. At this time a fine maculopapular erythematous eruption appeared on the face and soft palate. Because of the rash the dose of iodine was halved and later discontinued. Cultures of the blood and urine were sterile and culture of material from the throat revealed no hemolytic streptococci. Two days before the iodine was stopped the leukocyte count was 7,100 with 10 per cent eosinophils, a finding compatible with a drug eruption. After the cessation of iodine therapy the temperature fell toward normal, the eruption faded and two weeks later the eosinophilia had disappeared. Since the administration of phenobarbital was continued throughout the entire period, this medication could scarcely be incriminated as a factor in the production of the febrile drug reaction. Because of a recurrence of the hyperthyroid symptoms and a rise in the basal metabolic rate, iodine therapy was resumed in very small dosage (0.3 cc. a day). The patient seemed to tolerate this dose very well and was discharged from the ward September 20 with instructions to continue taking iodine at home and to report to the outpatient clinic at regular intervals. She had gained 23 pounds (10 Kg.) during her six weeks' stay in the hospital and was symptomatically much improved.

Interval History.—The patient continued to take a small dose of iodine at home for six months, during which time she gained 15 pounds (6.8 Kg.) more. She then discontinued the iodine of her own accord. In October 1931 she began to have some difficulty in swallowing and breathing, owing to the increased size of the goiter. Because of these symptoms and a loss of 20 pounds (9 Kg.) she was readmitted to the hospital April 13, 1932.

Examination.—The temperature was 100.2 F., the pulse 128, the respiratory rate 28 and the blood pressure 130/40. She weighed 104 pounds (47 Kg.) and now presented the characteristic picture of severe exophthalmic goiter. The striking features were marked undernutrition, muscular weakness, extreme restlessness and emotional instability, sexual infantilism, marked exophthalmos with the associated eye signs of hyperthyroidism, enlarged tonsils, a diffusely enlarged thyroid gland with a thrill and loud bruit over it, cardiac enlargement with a systolic murmur loudest over the conus, moderate edema of the ankles and both fine and coarse tremors of the extended fingers. She was rather hoarse and laryngoscopic examination revealed that the vocal cords did not quite approximate.

The blood count showed slight anemia with red blood cells numbering 3,850,000 and hemoglobin 62 per cent, white blood cells 6,200 with polymorphonuclears 33 per cent, eosinophils 1 per cent, lymphocytes 60 per cent and monocytes 6 per cent. The nonprotein nitrogen was 20 mg. per hundred cubic centimeters, blood sugar 70 mg. and blood cholesterol 130 mg. The urine was normal. The basal metabolic rate was + 53.

Course.—For the first six weeks in the hospital the patient was treated with bed rest, a high caloric diet and sedatives. On this regimen the basal metabolic rate dropped to + 28 but the tachycardia persisted. The temperature had not risen above 101 F. duing this period. May 24 compound solution of iodine was started in the usual dose of 3 cc. a day. On the eighth day of medication the patient's temperature began to rise and subsequently reached peaks of 104 on two separate occasions (fig. 1). The fever was accompanied by a few constitutional symptoms such as mild conjunctivitis and arthralgias. The throat was slightly injected but there was no cutaneous eruption. The leukocyte count remained normal; unfortunately no differential count was made during the febrile period. Cultures of the blood, urine and throat gave no evidence of an acute infection. Finally, June 7 the compound solution of iodine was discontinued and the temperature gradually fell to its original level. The only other medication that she had received during this period was barbital, and the temperature returned to normal in spite of the continued use of this sedative. Because of the episode of high fever, which was regarded as a reaction to iodine, the patient was treated symptomatically with sedatives and warm tubs for the next four months. During this period she remained afebrile, her weight increased to 150 pounds (68 Kg.) and the basal metabolic rate fell to + 5. Finally, beginning October 8 she was again given compound solution of iodine 1.8 cc. a day for the next five days, with no apparent reaction. October 13 a double partial lobectomy was performed under avertin-ether anesthesia. The patient stood the operation well and after a rather stormy postoperative course made an excellent recovery. She has remained in good health during the past six years.

This case has been reported in considerable detail because febrile reactions to iodine therapy developed on two separate occasions nearly two years apart. The time relationship between the administration of iodine and the onset of fever in each instance made it appear highly probable that the iodine was in some way responsible for the fever. The absence of any other obvious cause for fever gave further support to such a view. With the first bout of fever a cutaneous eruption and distinct eosinophilia developed; no rash appeared during the second episode of fever. Later she was given a very short course of iodine (during which she remained afebrile) prior to double partial lobectomy, and she made an excellent recovery following the operation.

CASE 2.—*History.*—E. J., a Negro school girl aged 15, admitted to the medical ward Oct. 17, 1931, complained of "goiter" and "nervousness." One sister had been operated on for thyroid disease at the age of 15. The patient's past history was noncontributory. For four months she had noticed tremor and nervousness and for three months she had complained of palpitation, insomnia, increased appetite and progressive swelling of the neck. She had lost 6 pounds (2.7 Kg.) in three months. Two weeks after the onset of her symptoms she consulted her physician, who gave her "some black drops, like iodine."

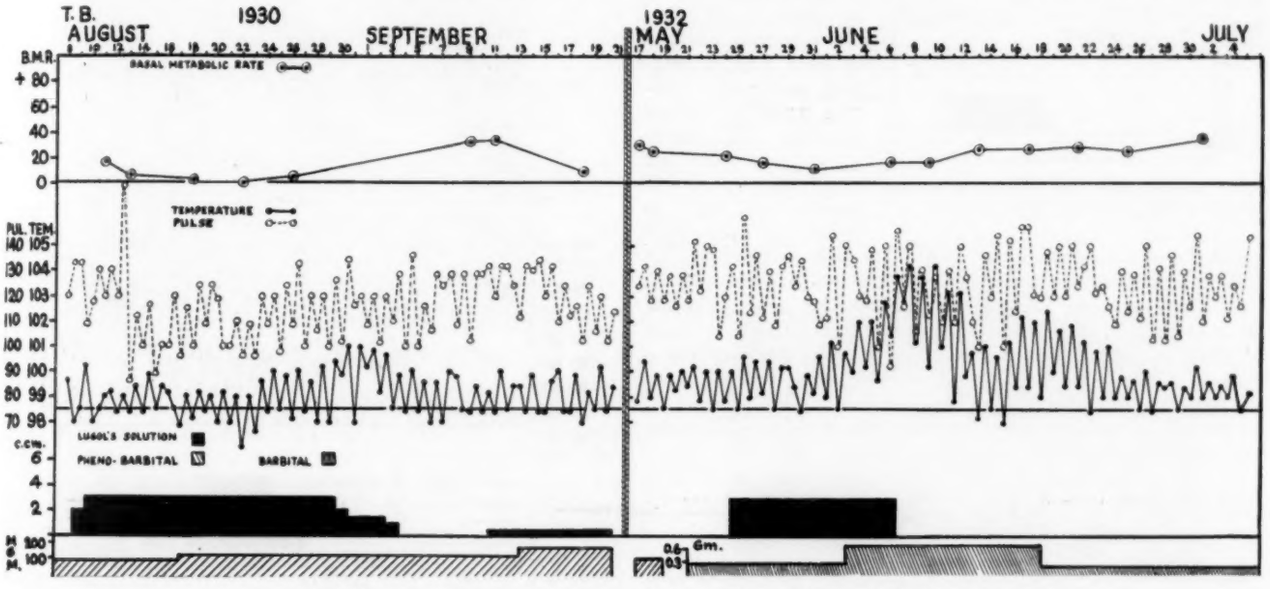

Fig. 1 (case 1).—The course of the temperature, pulse and basal metabolic rate.

Examination.—The temperature was 99 F., the pulse 140, the respiratory rate 24 and the blood pressure 160/70. The patient appeared nervous. There were both fine and coarse tremors of the tongue and outstretched fingers and there were definite exophthalmos and lagging of the lid. The thyroid gland was diffusely enlarged; there were a palpable thrill and an audible bruit over the gland. The heart was enlarged and a gallop rhythm was noted.

There was no anemia. The white blood cell count was 6,200 with a normal differential formula, there being only 1 per cent eosinophils. The Wassermann reaction was negative. The basal metabolic rate was + 23.

Course.—The patient was kept in bed; during the first two weeks she received no medication other than phenobarbital (160 mg. daily). The phenobarbital was then discontinued and she was given 3 cc. of compound solution of iodine a day. Immediately her temperature began to rise, reaching a peak of 105 F. on the ninth day of iodine treatment (fig. 2). On the fifth day the patient's throat became sore and inflamed

and the cervical lymph nodes were palpable. The white blood count was 7,300. The lungs were clear. Cultures of material from the throat revealed no beta hemolytic streptococci or Klebs-Löffler bacilli, and stool culture, blood culture and the Widal reaction were all negative. On the eighth day a transitory papulomacular rash appeared over the back of the hands, the white blood cell count rose to 12,200 and the differential count showed 4 per cent eosinophils. The administration of compound solution of iodine was discontinued on the ninth day, the temperature fell abruptly and the cutaneous rash promptly disappeared. The patient was operated on five days later and made an uneventful recovery.

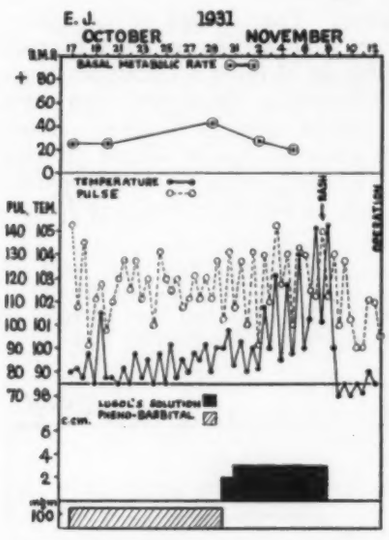

Fig. 2 (case 2).—The course of the temperature, pulse and basal metabolic rate.

CASE 3.—*History.*—H. R., a carpenter aged 33, was admitted to the hospital Feb. 12, 1932, with a history of nervousness, irritability, dizziness, inability to sleep well, palpitation, exertional dyspnea and increased sweating for nearly eight years. He had gradually lost 40 pounds (18 Kg.) in spite of increased appetite and consumption of food. He had been taking an iodine preparation for about six weeks prior to admission.

Examination.—The temperature was 98.6 F., the pulse 74, the respiratory rate 20 and the blood pressure 140/70. The principal aspects were evidence of loss of weight, restlessness, tremors of the tongue and fingers, exophthalmos with the other eye signs of hyperthyroidism, moderate diffuse enlargement of the thyroid gland and slight cardiac enlargement. The pulse was regular.

The blood count showed no anemia; the white blood cells numbered 5,000 with 45 per cent lymphocytes and no eosinophils. The urine was normal. The basal metabolic rate was + 40. The Wassermann reaction was negative.

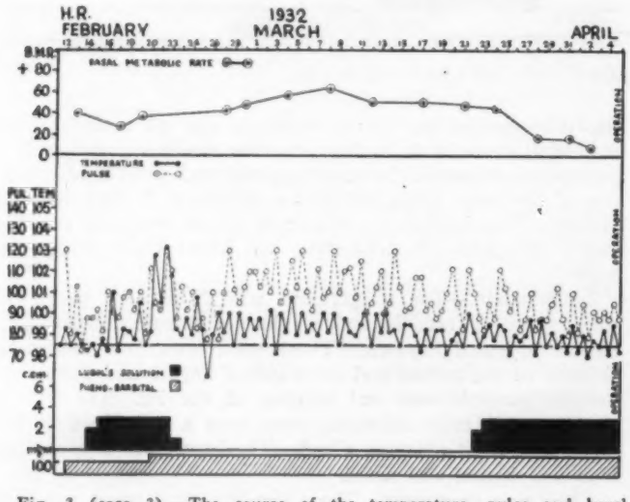

Fig. 3 (case 3).—The course of the temperature, pulse and basal metabolic rate.

Course.—Two days after admission a course of compound solution of iodine 3 cc. a day was prescribed, along with running doses of phenobarbital as a sedative. On the third day of iodine the patient's temperature began to spike, reaching 101 F. that evening and 103 three days later (fig. 3). The patient's throat was sore and injected; no exudate was seen and the culture was negative for beta hemolytic streptococci. The cervical nodes were enlarged. The skin was hot and flushed but no definite eruption was noted. February 19 the leukocyte count was 5,100 with polymorphonuclears 69 per cent, eosinophils 2 per cent, lymphocytes 26 per cent and monocytes 3 per cent. Three days later the compound solution of iodine was discontinued and the high spiking fever immediately gave way to a low grade fever which persisted for a month. The basal metabolic rate remained quite high during this period. March 1 auricular fibrillation set in. A second course of compound solution of iodine 3 cc. a day was started March 22; the medication was continued for two weeks without fever or other reaction, and a double partial lobectomy was performed April 5. The patient made an uneventful recovery and was discharged ten days later.

CASE 4.—*History.*—B. B., a Negro waiter aged 56, admitted to the medical service Oct. 17, 1932, complained of a "nervous breakdown." In 1919 he had had an attack of "influenza" followed by several weeks of nervousness, weakness and tachycardia. The immediate symptoms leading up to his admission to the hospital began in April 1932 with a second attack of "influenza," followed by increasing nervousness, tremor, cough, sweating and weakness. Three months later he began to have edema of the ankles and dyspnea on exertion. Later moderately severe diarrhea developed. In spite of an increase in appetite he had lost 40 pounds in six months. There was no history of iodine medication prior to admission.

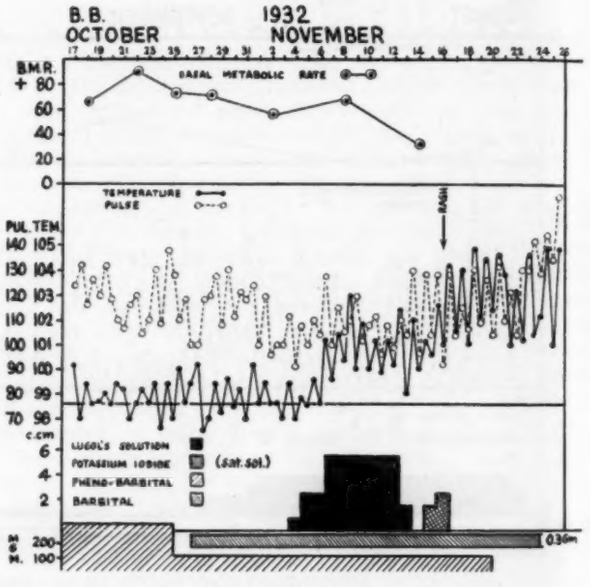

Fig. 4 (case 4).—The course of the temperature, pulse and basal metabolic rate.

Examination.—The temperature was 98.6 F., the pulse 130, the respiratory rate 25 and the blood pressure 180/80. The patient was emaciated and restless, with marked tremors. He perspired very freely. The eyes were prominent with a distinct stare and weakness of convergence. The thyroid showed slight diffuse enlargement with a thrill and bruit. The heart was enlarged and its action tumultuous. There was a loud systolic murmur at the apex. The rhythm was regular. The liver and spleen were not felt and there was no lymphadenopathy.

The blood count was essentially normal with red blood cells numbering 4,300,000, hemoglobin 88 per cent, white blood cells 7,300 with a normal differential formula (70 per cent polymorphonuclears, no eosinophils). The urine was normal. The Wassermann reaction was negative. The basal metabolic rate was + 66.

Course.—The entire course in the hospital is portrayed in figure 4. Treatment at first consisted of bed rest, a 5,000 calory diet, bismuth subcarbonate and camphorated tincture of opium for the diarrhea, and both barbital and phenobarbital as sedatives. During this period the rectal temperature never

rose above 100.2 F. November 4 iodine therapy was commenced in the form of compound solution of iodine 3 cc. a day. Two days later the temperature rose to 101.2 F. in the evening; since iodism was suspected, the dose of compound solution of iodine was doubled the following day in the hope of alleviating the symptoms. This was done on the basis of

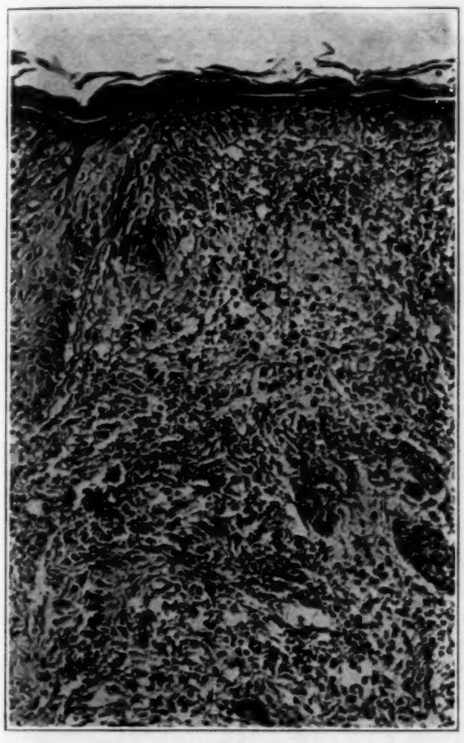

Fig. 5 (case 4).—Infiltration of skin (×100).

reports [8] that the symptoms of iodism may frequently be overcome by doubling the dose of iodine. However, the patient's temperature remained elevated, reaching 103 on the fifth day of iodine, at which time he complained of itching over his back. November 13 (the ninth day of iodine) the leukocyte count was 9,700 with the following differential count: polymorphonuclears 65 per cent, eosinophils 11 per cent, basophils 1 per cent, lymphocytes 22 per cent, monocytes 1 per cent. Because of the eosinophilia and persistent fever the compound solution of iodine was discontinued. November 15 the patient was given 2 cc. of a saturated solution of potassium iodide and the following day 3 cc. of the same preparation. The solution of potassium iodide was given in the hope that the patient would tolerate the iodine in this form better than in the form of compound solution of iodine. The result was disastrous, for the temperature spiked to 104.2 F. on the second day, concomitant with the appearance of a dense papular rash over the trunk. The rash consisted of dull reddish papules from 2 to 4 mm. in diameter, which were almost conglomerate in places. The mouth was dry and there was a hemorrhagic plaque in the mucosa of the palate. Coryza was marked and the pharynx appeared fiery red. The potassium iodide was discontinued but the patient continued to grow rapidly worse. November 17 the eruption had spread to include the face and extremities as well as the trunk; it was most dense over the chest and shoulders. The buccal mucosa was very red and studded with petechiae. The patient complained of aching in his joints. Culture of material from the throat revealed no beta hemolytic streptococci or diphtheria bacilli. The high fever and eruption persisted up to the patient's death. Four days before death there was desquamation of the tongue and palate; the leukocyte count was 12,300 with 22 per cent eosinophils. Two days later there was generalized desquamation of the rash. Blood cultures were sterile. Treatment consisted of purely supportive measures such as calamine lotion locally, tubs, parenteral and rectal fluids, sedatives and finally an oxygen tent. These were of no avail, as the patient rapidly lost ground, became disoriented, vomited repeatedly, lapsed into coma and died November 25, three weeks after the initial dose of iodine.

Autopsy.—This was performed thirty-nine hours after death.[9] The gross anatomic appearances observed at this time were as follows:

The skin was generally covered with a desquamating maculopapular rash. Most of the papules were from 1 to 2 mm. in diameter; they were a little darker than the skin and were covered with a fine grayish opaque dustlike desquamating layer.

The tongue was bright red with a fresh ulcer at the base. The epiglottis was fiery red and somewhat edematous. The mucosa of the larynx, trachea and bronchi was much reddened and there were little flecks of grayish white exudate on the surface.

Both lobes of the thyroid were moderately enlarged, each lobe measuring 6.5 by 3.5 by 3 cm. On section the tissue was firm and rather dry, and throughout there were many gray-white opacities. The thymus was enlarged, weighing 25 Gm.

The lymph nodes were distinctly enlarged with individual nodes up to 4 cm. in diameter.

The heart weighed 330 Gm.; there was some narrowing of the coronary arteries but no occlusion. There was moderate arteriosclerosis of the aorta and its larger branches; the changes did not suggest syphilitic aortitis.

The lungs showed congestion of the lower lobes with patches of lobular pneumonia and some areas suggesting hemorrhage. The bronchi and bronchioles were all bright red and contained a grayish white exudate.

The liver weighed 1,630 Gm. There were no stones in the gallbladder. Over the surface of the liver and on section numerous small yellow patches up to 1 cm. in diameter were seen.

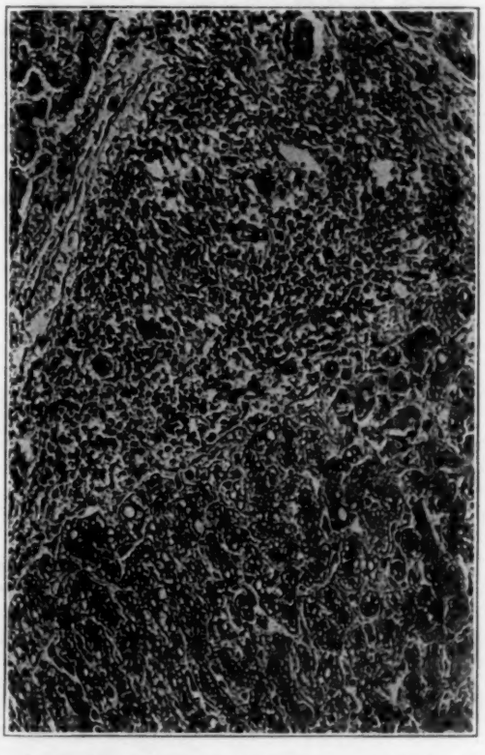

Fig. 6 (case 4).—Perivascular inflammatory lesion in a periportal space in the liver (×100).

The spleen was much enlarged, weighing 370 Gm. There were many mottled reddish yellow patches in the capsule. On section the pulp bulged; the malpighian bodies were very large.

There were small hemorrhages in the gastric mucosa.

8. Moore, J. E.: The Modern Treatment of Syphilis, Springfield, Ill., Charles C. Thomas, Publisher, 1933.

9. The autopsy was performed by Dr. Samuel Blackman, who also offered criticisms and suggestions in the preparation of this description of the pathologic aspects.

The kidneys were very red, the pelves hyperemic. The bladder showed cystitis cystica and the tunica vaginalis of the testes was fiery red.

Microscopic sections showed changes in the thyroid gland typical of hyperthyroidism. Of chief interest were the miliary inflammatory perivascular lesions that were present in the majority of the tissues (figs. 5, 6, 7 and 8). These lesions were found in the lymphoid tissues at the back of the tongue and about little blood vessels and tufts of mucous glands deep in the tongue. In the lymph nodes and spleen there were many such lesions usually occupying the position of the germinal centers. Some were found in the lung about the bronchioles. In the liver circumscribed lesions were found in practically every portal space. There were a few similar lesions in the heart muscle,[10] while in the media of the aorta they were very numerous. Many were found in the kidney, where they were located about small arterioles. The sections of the stomach showed some lesions about the blood vessels in the muscularis. In the skin the lesions were not so definitely circumscribed, but the whole corium was diffusely infiltrated with mononuclear cells, lymphoid and plasma cells and occasional eosinophils; there was some accentuation about blood vessels, sweat and sebaceous glands and the tips of the epithelial papillae.

The nature of the lesions was practically the same in all these locations. They consisted mainly of mononuclear cells; also in most of the lesions there were lymphocytes and a few eosinophils. Often there were epithelioid cells arranged as they are in tubercles, and in many of the organs some lesions contained typical Langerhans giant cells. Certain of the lesions, especially in the spleen, showed a central area of necrosis. No spirochetes were demonstrated by dark field examination or in stained smears; neither tubercle bacilli nor other bacteria were found in any of the lesions. The nature of these lesions

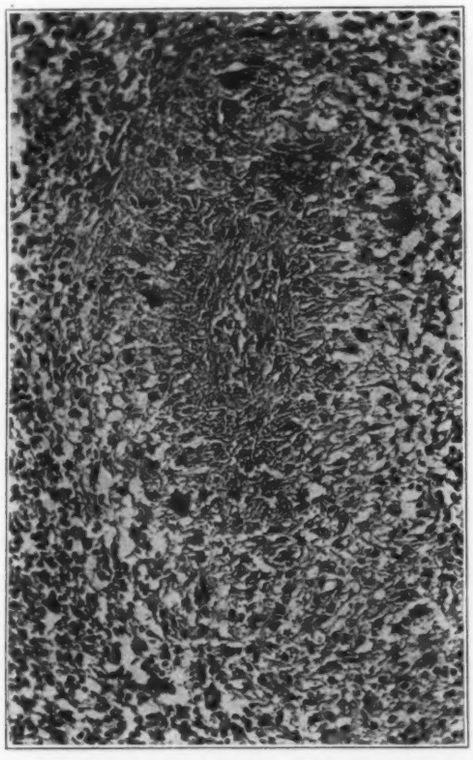

Fig. 7 (case 4).—Lesion in the spleen with central necrosis (×200).

was obscure. It was suggested, in view of the clinical record, that the lesions were actual results either directly of iodine or of allergy to a combination of iodine with some protein.

In addition to the peculiar circumscribed inflammatory lesions described, the following results of microscopic examination were of some interest: The lymph nodes showed hyperplasia of the lymphoid tissue and some fresh hemorrhages. The sinuses contained an abundance of mononuclear cells. The femur marrow was fatty; the vertebral marrow was somewhat hypoplastic with suggestive areas of necrosis.

The final anatomic diagnosis was hyperplasia of the thyroid; enlargement of the thymus; slight cardiac hypertrophy; scars in the myocardium; peculiar miliary lesions of necrosis and

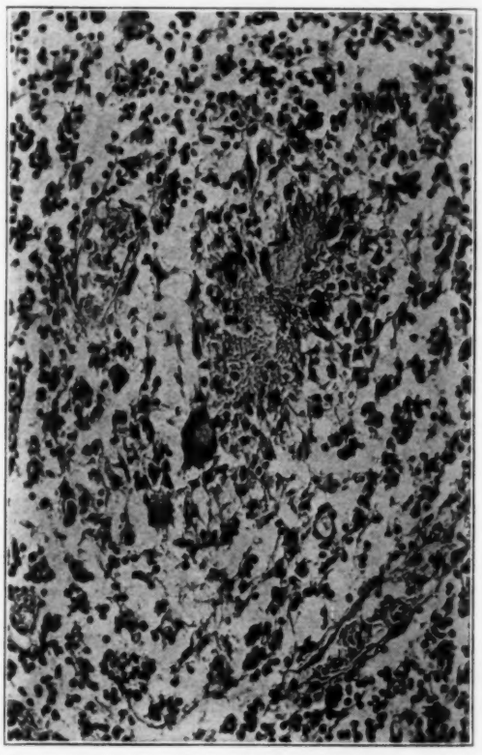

Fig. 8 (case 4).—Lesion in a lymph node showing central necrosis and giant cells (×200).

inflammation with eosinophils in the skin, tongue, tonsils, lungs, lymph nodes, spleen, liver, kidneys, ureters, epididymides, testes, prostate, stomach, heart and aorta; acute splenic tumor; eosinophilia (blood); acute tonsillitis; great enlargement of the lymph nodes, purulent bronchitis; hemorrhages in the lungs, and scars in the pleura.

This patient, suffering from severe hyperthyroidism, had a high fever and a dense papular rash associated with marked eosinophilia during a course of iodine therapy. Although all iodine was eventually discontinued, the fever persisted and the patient grew rapidly weaker and died twenty-one days after the initial dose of iodine. Autopsy revealed miliary inflammatory perivascular lesions throughout the majority of the tissues of the body.

CASE 5.—*History.*—D. H., a married woman aged 53, admitted to the medical ward Feb. 23, 1938, complained of "heart trouble" of five years' duration. She had had "growing pains" at the age of 9 but there was no history of chorea or swollen tender joints. Thirteen years before admission to the hospital she had first noticed palpitation and swelling of the neck. Eight years later she was forced to go to her physician because of shortness of breath. He told her that she had rheumatic heart disease and treated her with digitalis. Five months before admission the patient had an attack of tonsillitis, and a month later dyspnea, palpitation, weakness and nervousness became severe. In spite of a ravenous appetite she lost 30 pounds (13.6 Kg.). She continued to take digitalis until three weeks before admission, at which time she took an iodine preparation for one week with apparently no ill effects.

Examination.—The temperature was 100.8 F., the pulse 130, the respiratory rate 30 and the blood pressure 140/80. The patient was gaunt, emaciated and extremely nervous with a

10. On the basis of these lesions this case was included in a group reported as showing granulomatous myocarditis (Jonas, A. F., Jr.: Granulomatous Myocarditis, Bull. Johns Hopkins Hosp. **64**: 45-66 [Jan.] 1939).

noticeable coarse tremor of the hands. The eyes converged poorly and there was very slight exophthalmos. The right lobe of the thyroid gland was greatly enlarged and was firm to palpation. No thrill or bruit was present. There were signs of fluid at the base of the right lung. The heart was enlarged to percussion and the rhythm was grossly irregular. There was a systolic murmur and at the pulmonic area both systolic and diastolic murmurs were audible and the second pulmonic sound was greatly accentuated. The veins of the neck were distended and the liver and spleen were moderately enlarged. There was no peripheral edema.

Examination of the blood revealed no anemia; the white blood cell count was 12,920 with a normal differential count and no eosinophils. There was a trace of albumin in the urine. The basal metabolic rate was + 83. The Wassermann reaction was negative.

At the time of admission the diagnosis was made of nodular goiter with hyperthyroidism, congenital heart disease (probably patent ductus arteriosus or patent foramen ovale), auricular fibrillation, congestive heart failure and right hydrothorax.

Course.—The patient responded well to routine therapy for heart failure, consisting of bed rest, limitation of fluids and digitalis. Eight hundred cc. of fluid was removed from the right side of the chest by thoracentesis. After one month at bed rest the patient's basal metabolic rate had fallen to + 61. It had been noticed, however, that the iodine used to clean the arm for venipuncture caused a rather severe local dermatitis. For this reason patch tests were performed with both potassium iodide and compound solution of iodine. The patient was sensitive to both and iodine therapy was thought to be contraindicated. The thyroid gland was therefore irradiated (ten treatments of 195 roentgens each) without any noticeable effect on the basal metabolic rate. After the patient had been in the hospital for two months the patch test with potassium iodide (20 per cent) was repeated and on this occasion was negative. Potassium iodide treatment was started, the dose being gradually increased to 2 Gm. a day. The basal metabolic rate fell rapidly to + 31 and the patient seemed greatly improved. However, on the eighteenth day of iodine treatment the temperature rose suddenly to 102.4 F. (fig. 9) and a sore throat and coryza developed. The following day she was given a single dose of 0.6 Gm. of potassium iodide and her temperature rose further to 104.2 F. There was no cutaneous rash or glandular enlargement. The white blood count was 7,500 and the differential count was normal, with only 1 per cent eosinophilic cells. Cultures of the blood and of material taken

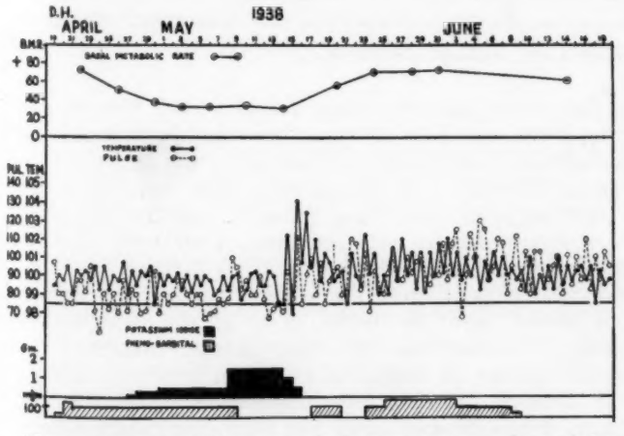

Fig. 9 (case 5).—The course of the temperature, pulse and basal metabolic rate.

from the throat were sterile and x-ray films of the lungs and sinuses were clear. Culture of the urine showed a light growth of Bacillus coli but there were no urinary symptoms and there was no tenderness of the costovertebral angle. During the five weeks following the sharp febrile reaction the patient continued to have a low grade fever although she was given no further iodine; her basal metabolic rate again became greatly elevated, she continued to lose weight and finally, June 18, she was discharged from the hospital to return later for operation after a prolonged rest period at home.

CASE 6.—*History.*—B. F., a housewife aged 57, admitted to the medical service June 6, 1938, complained of nervousness and palpitation. Her family and past histories were noncontributory. Eighteen months before admission she noticed increasing weakness, palpitation and a gradual swelling of the neck. At this time she began to lose approximately 2 pounds (900 Gm.) a week and noticed that her eyes were becoming

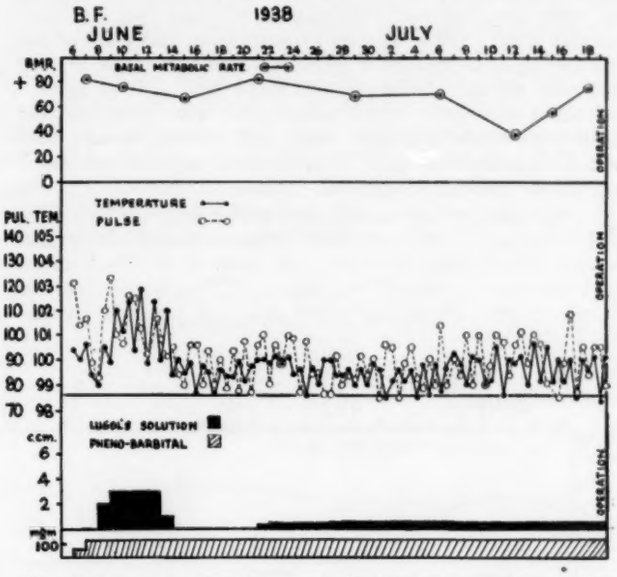

Fig. 10 (case 6).—The course of the temperature, pulse and basal metabolic rate.

more prominent. Twelve months before admission her physician treated her with ultraviolet rays and a salty medicine (probably potassium iodide) but she improved very little. During the last four months before admission to the hospital all her symptoms became more severe and she suffered from moderate diarrhea.

Examination.—The temperature was 99.6 F., the pulse 118, the respiratory rate 26 and the blood pressure 140/80. The patient was very nervous and slightly undernourished, with marked exophthalmos and a noticeable lagging of the lid. The thyroid gland was diffusely enlarged and there was a loud bruit heard over both lateral lobes. The heart was slightly larger than normal, but the rhythm was regular and there was no evidence of congestive heart failure. There was a fine tremor of the fingers.

The blood count showed no anemia. The white blood cell count was only 3,200, although the differential count was essentially normal. The Wassermann reaction was negative. The basal metabolic rate was + 83.

Course.—On the third day in the hospital compound solution of iodine was started and the patient was given 3 cc. a day for a period of six days. On the second day of treatment her temperature rose and remained elevated during the entire period of treatment (fig. 10) but fell abruptly to normal as soon as the drug was discontinued. During the period of fever the patient had no complaints. There was no cutaneous eruption, cultures of the blood and urine were sterile and an x-ray film of the chest was clear. There was no leukocytosis; a differential count was not made. After the temperature had remained normal for one week the compound solution of iodine was given again, this time in doses of only 0.6 cc. a day. A low grade fever developed and persisted during the next six weeks of treatment, but at the end of this time the patient was operated on and made an uneventful recovery. She was given daily doses of phenobarbital as a sedative throughout her stay in the ward.

CASE 7.—*History.*—M. K., a school girl aged 20, admitted to the hospital June 16, 1938, complained of nervousness. The family and past histories were noncontributory. There was no history of rheumatic fever. Eighteen months before admission the patient noticed nervousness, palpitation and tremor of the hands. Her physician treated her for one week with brown

pills (? iodine), which caused a marked relief from symptoms. One month before admission, following a quarrel in her household, she noticed a rapid return of her former nervousness, palpitation and tremors. She did not lose weight but suffered from diarrhea for three days before entering the hospital.

Examination.—The temperature was 99.2 F., the pulse 104, the respiratory rate 20 and the blood pressure 160/80. The patient was well developed, well nourished and somewhat nervous, with very noticeable flushing of the skin over her face, neck and arms. There was no exophthalmos, and none of the usual eye signs of hyperthyroidism were present. The thyroid gland was diffusely enlarged and there was a loud systolic bruit heard over both lateral lobes. The heart was definitely enlarged, the second pulmonic sound was accentuated and there was a loud gallop rhythm. There were no signs of congestive heart failure and the rhythm was regular.

The red blood cell count and hemoglobin were normal. The white blood cell count was 6,400, with a normal differential count; no eosinophilic leukocytes were seen in the blood smear. The Wassermann reaction was negative. The basal metabolic rate was + 49. Blood cholesterol was 135 mg. per hundred cubic centimeters.

the cutaneous rash two weeks, and the jaundice did not completely subside for nearly a month later. The patient was kept at complete bed rest for more than a month after all signs of the reaction to the iodine had subsided, but the basal metabolic rate remained elevated above + 60. Finally, September 15 a right partial lobectomy was done under local anesthesia. The patient stood the operation well and the postoperative course was uneventful. At the time of discharge from the hospital (October 1) the patient's basal metabolic rate was + 46. After eight weeks at home she was readmitted to the hospital November 28 and the left lobe of the thyroid was removed. Following the second operation the basal metabolic rate fell to + 9 and she was discharged from the hospital on December 6, much improved.

COMMENT

A number of the more significant features observed in the seven instances of severe febrile iodism which occurred in a series of 400 hyperthyroid patients treated with iodine are summarized in table 2.

No definite predisposing factors were brought out. Neither sex nor race appeared to be a factor, for five

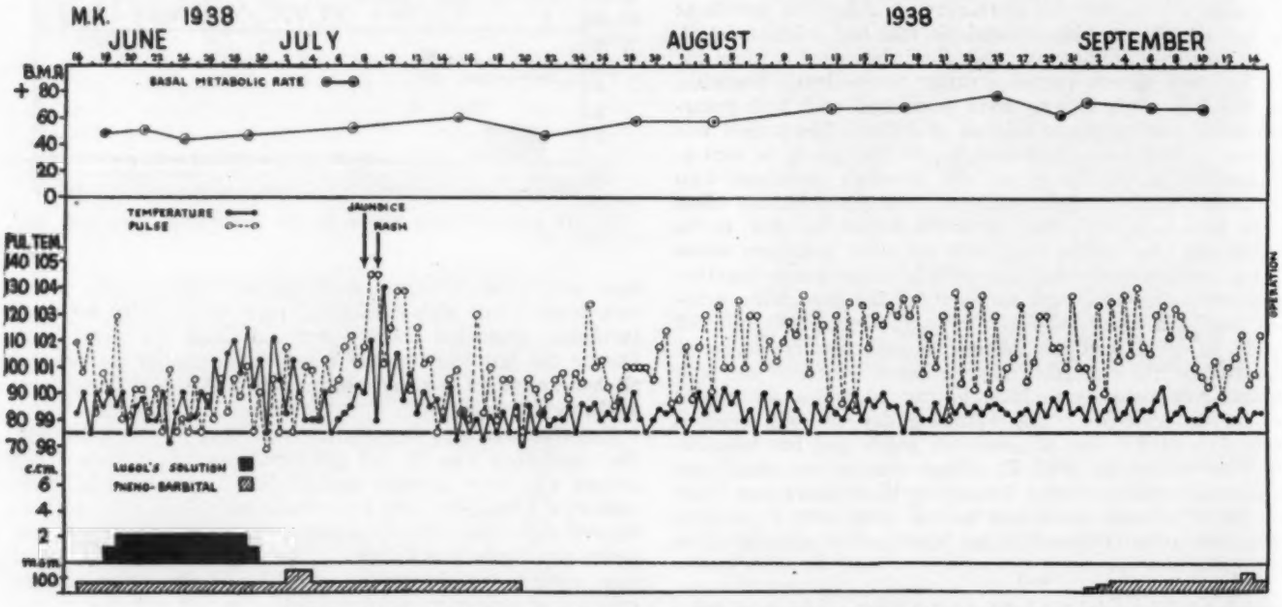

Fig. 11 (case 7).—The course of the temperature, pulse and basal metabolic rate.

Course.—The patient was given compound solution of iodine 3 cc. a day, and on the ninth day of treatment fever developed (fig. 11). Two days later (June 29) the iodine therapy was discontinued. July 1 the temperature rose to 101.4 F. There was a definite conjunctivitis with photophobia and marked generalized glandular enlargement. The patient did not complain of a sore throat but the pharynx was injected. The white blood cell count was only 5,200 but the differential count revealed an eosinophil count of 16 per cent. The lungs were clear and cultures of material from the throat and of the urine and stool revealed no cause for the fever. By July 5 the temperature had returned to normal and the conjunctivitis had subsided. The white blood cell count was 6,000 with 9 per cent eosinophils. After three days of normal temperature there was a sudden rise on July 8 to 102 F.; the patient complained of diarrhea and it was noticed that she was becoming jaundiced. The icterus index of the blood serum was found to be 20, there was no anemia, the white blood cell count was 6,800 and there were still 6 per cent eosinophils. The liver was palpable at the costal margin and was quite tender. The following day (July 9) a papular erythematous rash appeared over the face, neck, arms, upper part of the chest and ankles. The urine contained both bile and urobilin and the van den Bergh determination on the blood serum gradually rose to a maximum of 5 mg. per hundred cubic centimeters (prompt biphasic reaction) on July 18. The fever lasted one week and

of the seven patients were females and five of the seven were white, which ratios are roughly proportional to the racial and sexual distribution of the entire series. The fact that three of the patients were under 21 years of age suggests that young patients may be somewhat more susceptible to such reactions, since only twenty-eight patients, or 7 per cent of the entire series, were under 21 years of age. The level of the basal metabolic rate varied from + 16 to + 83 at the time iodine therapy was started. All seven patients presented the clinical picture of moderate to severe hyperthyroidism.

A definite history of previous iodine medication was obtained in only two cases but was suspected in three others. In two cases there was no suggestion of iodine therapy prior to admission to the hospital. The form in which iodine was being administered when the febrile reaction developed seemed to be of no importance. Five patients received only compound solution of iodine, whereas one received only potassium iodide; one patient was given first compound solution of iodine and later potassium iodide. The dose of iodine was not excessively large or small in any case.

The temperature had begun to rise on or before the fourth day of iodine therapy in four cases. In the

other three cases the hyperpyrexia first appeared considerably later. The peak of the fever was reached within several days of the onset and varied between 101 and 105 F. In three cases the temperature returned to normal within several days after iodine had been discontinued, whereas in four instances fever persisted for periods of from ten to thirty days after the cessation of therapy.

In addition to fever, other manifestations of iodism, such as cutaneous eruptions, conjunctivitis, coryza, pharyngitis and enlargement of the lymph nodes were common. Cutaneous eruptions occurred in four cases; the rash in each instance consisted of small erythematous papules involving chiefly the face, chest and upper extremities. It is of interest that in case 1 a rash accompanied the first febrile reaction to iodine but did not develop during the second more severe episode of fever nearly two years later. Definite conjunctivitis was present in four cases, coryza and pharyngitis in six cases, and enlargement of the lymph nodes in four cases.

In one case well marked jaundice developed, apparently from a toxic hepatitis, while the rash was still present. The jaundice persisted for nearly a month.

In one case (6) the fever, unaccompanied by other manifestations of iodism, furnished the only evidence of a reaction to iodine.

The leukocyte count remained normal in five cases; two patients showed a slight leukocytosis, just over 12,000 white blood cells per cubic millimeter. Eosinophil counts of from 4 per cent to 22 per cent developed in the four cases presenting cutaneous eruptions, but eosinophilia was absent in two cases in which there was no rash. Unfortunately no differential count was made in case 6 or case 1 during the second episode of iodine fever. Some importance may be attached to the fact that in two cases (4 and 7) the eosinophil count had risen well above normal before a definite rash became recognizable. Thus eosinophilia in association with fever may serve as an early warning to discontinue iodine.

Since the clinical manifestations in these seven cases were characteristic of idiosyncrasy to a drug, a careful investigation was made of other drugs that the patients were receiving when symptoms of idiosyncrasy developed. It was found that at some time during their hospital stay all seven patients received barbiturates in the form of barbital, or more commonly phenobarbital—drugs which may occasionally give rise to cutaneous eruptions. However, as shown in the charts, the onset and subsidence of the fever and associated symptoms bore no definite time relation to the administration of these sedatives. In five cases barbiturates were continued throughout the period of fever and for a considerable time thereafter, whereas in two cases (2 and 5) no barbiturates were being taken at the time the fever developed. Moreover, 95 per cent of the remaining 393 patients in the series received barbiturates and no untoward effects were noted other than an occasional mild afebrile cutaneous eruption.

The subsequent course of each of the seven patients in whom severe symptoms of idiosyncrasy to iodine developed has been briefly summarized in table 2. Four patients received no further iodine; two of these were successfully operated on after the fever and associated symptoms had subsided. Operation for the third patient was considered too hazardous in view of her poor cardiac condition, and she was discharged from the hospital to rest at home. The course in the fourth case was rapidly downhill to death as a result of the severe febrile reaction to iodine. The remaining three patients after a suitable rest period were given another course of iodine just prior to operation; two showed no febrile reaction while the third developed a low grade fever. Each of these survived double partial lobectomy and made an excellent recovery.

TABLE 2.—*Significant Features of the Seven Cases of Febrile Iodism*

Case	Race, Sex and Age	Previous Iodine	Basal Metabolic Rate	Form and Daily Dose of Iodine	Day of First Fever	Highest Fever	Rash	Conjunctivitis	Coryza and Pharyngitis	Enlarged Nodes	White Blood Cells	Eosinophils, per Cent	Barbiturates	Comment
1. T. B.	(*a*) White ♀ 15	No	+16	Compound solution of iodine 3 cc.	17	101	+	0	0	0	7,100	10	+	Compound solution of iodine discontinued; temperature returned to normal
	(*b*) 17	Yes	+53	Compound solution of iodine 3 cc.	8	104	0	+	+	0	6,500	?	+	Compound solution of iodine stopped; temperature returned to normal; short third course of iodine and successful operation 4 months later
2. E. J.	Negro ♀ 15	Yes (?)	+23	Compound solution of iodine 3 cc.	4	105	+	0	+	+	12,200	4	+	Compound solution of iodine stopped; temperature returned to normal; successful operation 5 days later
3. H. R.	White ♂ 33	Yes	+40	Compound solution of iodine 3 cc.	3	103	0	0	+	+	5,100	2	+	Compound solution of iodine stopped; second course for 2 weeks before operation without reaction; successful operation
4. B. B.	Negro ♂ 56	No	+66	(*a*) Compound solution of iodine 3-6 cc. (*b*) Potassium iodide 2-3 Gm.	2	104.8	+	+	+	+	12,300	22	+	Vomiting, coma and death on 21st day; autopsy
5. D. H.	White ♀ 53	Yes	+83	Potassium iodide 0.3-2 Gm.	18	104.2	0	+	+	0	7,500	1	+	Potassium iodide stopped; fever continued; patient lost ground; discharged without operation
6. B. F.	White ♀ 37	Yes (?)	+83	Compound solution of iodine 3 cc.	2	102.8	0	0	0	0	5,000	?	+	Compound solution of iodine stopped; temperature returned to normal; slight fever with 2d course of iodine; successful operation
7. M. K.	White ♀ 20	Yes (?)	+49	Compound solution of iodine 3 cc.	9	104	+	+	+	+	5,200	16	+	Compound solution of iodine stopped; fever continued; jaundice developed; no further iodine; sucessful 2 stage operations 2 and 4 months later

The one fatal case is of particular interest in view of the widespread lesions throughout the organs of the body noted at autopsy. The course of events in this case serves to emphasize the danger of continuing iodine once manifestations of idiosyncrasy have made their appearance.

Iodism, or idiosyncrasy to iodine, has long been recognized as an accident which is likely to occur in a small proportion of patients treated with iodine or iodides. The majority of cases that have been reported developed during the course of antisyphilitic therapy. In his review of iodide therapy in syphilis Snodgrass [11] states that iodism is of common occurrence if the oral route of administration is used. He noted iodism in 12 per cent of cases when the initial dose was 5 grains (0.32 Gm.) or less but in less than 1 per cent if the initial dose was more than 30 grains (2 Gm.). He made no mention of fever as a symptom of iodism. Katzenstein [12] states that fever is not an uncommon accompaniment of other manifestations of iodide intoxication but that it has seldom been observed as the only evidence of iodism, as was the case in two instances he reports. Moore [8] has seen uncomplicated fever produced by iodides in a few instances, particularly in cases of hepatic syphilis. He notes that some observers have ascribed this fever to the absorption of necrotic tissue but adds that this is probably not the correct explanation, as he has seen a precisely similar febrile reaction from the use of small doses of compound solution of iodine in nonsyphilitic patients with exophthalmic goiter. Incidentally, this is the only specific mention of febrile reactions to iodine in hyperthyroidism that we have been able to find in the literature.[13]

There is no obvious reason why febrile iodism should not develop in hyperthyroid patients, and it seems strange that so little attention has been directed toward this form of idiosyncrasy in the past. It is quite possible that certain of the febrile attacks of acute pharyngitis reported by Means may well have been instances of mild iodism which passed unrecognized.

Hoke [14] and Wolfsohn [15] have reported that practically all hyperthyroid patients tested gave positive cutaneous reactions to intracutaneous injections of sodium iodide. Since this reaction was so generalized, it would appear that increased irritability of the skin was responsible rather than actual allergy to iodine, as suggested by Wolfsohn.

Fatal iodism, such as occurred in one of our cases, must be extremely rare. The majority of the fatalities attributed to iodine fall into one of two groups: (1) overwhelming intoxications from the accidental or intentional ingestion of a large quantity of iodine [16] or (2) pustular or bullous ioderma which occasionally develops in patients who have taken iodides over long periods.[17] The only fatal case that we have found which resembles ours was reported by Mi and Yang: [18] A patient who had been given potassium iodide over a period of fifty-four days for the treatment of a traumatic hemorrhage in the eye developed a high fever, erythema, abdominal pain and vomiting; he died in coma on the fifth day. No postmortem examination was obtained in this case.

11. Snodgrass, W. R.: Observations on the Therapeutic Use of Iodides. Quart. J. Med. **4**: 247-268 (July) 1935.
12. Katzenstein, Lawrence: Fever Due to Iodides, Am. J. Syph., Gonor. & Ven. Dis. **22**: 346-348 (May) 1938.
13. Moore was referring to several of the cases reported in this paper.
14. Hoke, E.: Die Jodprobe: Erhöhte Jodempfindlichkeit der Haut bei Morbus Basedow, Thyreotoxikosen, thyreogen Stigmatisierten, und Sympathikotonikern, Med. Klin. **27**: 650 (May 1) 1931.
15. Wolfsohn, G.: Jodallergie bei Thyreotoxie, Med. Klin. **27**: 1788 (Dec. 4) 1931.
16. Finkelstein, Ruben, and Jacobi, Mendel: Fatal Iodine Poisoning: A Clinicopathologic and Experimental Study, Ann. Int. Med. **10**: 1283-1296 (March) 1937.
17. Hollander, Lester, and Fetterman, G. H.: Fatal Iododerma: The Eleventh Case Reported in the Literature, Arch. Dermat. & Syph. **34**: 228 (Aug.) 1936.
18. Mi, C. H., and Yang, C. T.: Iodide Fever, Chinese M. J. **52**: 887-888 (Dec.) 1937.

SUMMARY AND CONCLUSIONS

1. Seven instances of severe febrile iodism occurred in a series of 400 patients with hyperthyroidism treated with iodine, an incidence of 1.75 per cent.

2. Fever, cutaneous eruptions, coryza, pharyngitis, enlargement of the lymph nodes and eosinophilia were common manifestations. Jaundice developed in one case.

3. The pathologic changes in the single fatal case consisted essentially of miliary inflammatory perivascular lesions, which were present in the majority of the tissues.

4. The continuation of iodine after marked symptoms of idiosyncrasy have developed may be extremely dangerous.

5. Subsequent administration of iodine to patients in whom iodism has developed in the past may or may not give rise to a second febrile reaction.

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POSTPARTUM URINARY SUPPRESSION

RESEMBLING BILATERAL CORTICAL NECROSIS OF THE KIDNEYS

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When anuria or severe oliguria occasionally complicates the immediate puerperium, a serious clinical problem is presented. Eclampsia and the chronic hypertensive type of toxemia in themselves may give rise to oliguria post partum, often because of transient hypotension. Other conditions, the etiology of which is vague, such as bilateral cortical necrosis of the kidney, may also cause grave concern because of suppression of urine post partum. We report a case that resembles bilateral cortical necrosis, recently encountered, in which recovery took place.

REPORT OF CASE

A primipara aged 29, admitted to the Mayo Clinic Dec. 7, 1938, complained of having had slight edema of the face one week before term. Elevation in blood pressure, albuminuria or other evidence of toxemia of pregnancy was not present. December 3 the patient's physician had induced labor with 15 grains (1 Gm.) of quinine and 1 ounce (30 cc.) of castor oil. A normal labor of fourteen hours' duration had ensued but the baby had died in utero soon after pains had begun. After delivery of the child the patient had experienced two severe uterine hemorrhages with hematemesis and the appearance of gross blood in the stool. The uterus was packed, and on the following day two transfusions of 500 cc. each were given. The blood grouping of the patient and donors was type 4 and there was no evidence of incompatibility on cross agglutination. Nausea and vomiting continued. Tubal suction of the Wangensteen type was used.

Almost complete anuria had occurred after delivery, save for a few cubic centimeters of bloody urine. December 6 the pulse had been 80 beats a minute and of good quality. The

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blood pressure had been 120 mm. of mercury systolic, 80 diastolic. The patient was not in any great discomfort and was mentally alert. Edema of the face, grade 3 (on the basis of 1 to 4) with some dependent edema of the back had been evident. The hemoglobin was 42 per cent (Dare); erythrocytes numbered more than 2,000,000 per cubic millimeter. The value for blood urea was 160 mg. per hundred cubic centimeters of blood (LaMotte method). There was no renal pain or tenderness. The patient failed to excrete urine and for that reason was brought to the Mayo Clinic.

Examination at the time of registration revealed that the patient was acutely ill and had a sallow complexion but was mentally clear. Edema of the eyelids and body, grade 3, was present. On ophthalmoscopic examination there was moderate anemia of the disks and choroid; the arteries were dilated. One rather thin petechial hemorrhage with a whitish center was seen in the temporal portion of the right retina. In the left eye there was a small scleral hemorrhage. Physical examination of the heart and lungs gave negative results. The blood pressure was 138/50, the pulse rate was 85 and the temperature was 98.6 F. The abdomen was relaxed and the uterus on palpation extended to the umbilicus. There was ascites, grade 1 (on the basis of 1 to 4). A blood smear at the time of admission showed no evidence of leukemia. The number of platelets was normal and there was very active regeneration of erythrocytes with some normoblasts. The concentration of hemoglobin was 45 per cent (6.8 Gm.). Erythrocytes numbered 3,120,000 and leukocytes 20,200 per cubic millimeter of blood. Chemical examination of the blood gave evidence of 195 mg. of urea per hundred cubic centimeters. The specific gravity of the few cubic centimeters of urine obtained was 1.020; its reaction was acid; albumin grade 3, erythrocytes grade 1 and pus cells grade 2 were present. Casts were not found.

The patient's total urinary output during the first six days after delivery amounted to 570 cc. In all eight specimens albumin was graded 2 or 3, varying from day to day. The number of erythrocytes in the urine also varied with each specimen. The specific gravity became fixed at approximately 1.010. The concentration of blood urea continued to rise, reaching 266 mg. per hundred cubic centimeters and creatinine 12.5 mg. December 14. In spite of the high concentration of urea, only once did the patient complain of being drowsy and this condition was only transitory. December 12 the urinary output was 380 cc.; this increased daily until December 16, when 7,060 cc. of urine was excreted. The urinary output continued to be good and the output exceeded the intake until December 18, when a balance was reached.

Treatment consisted of a low salt diet with 50 Gm. of protein daily. In addition, transfusions of 250 cc. were given December 7 and 8 but were discontinued after this time to obviate the possibility of contributing to the anuria. Fluids were maintained at 3,000 cc. daily. These were given parenterally because of persistent nausea. The solutions used consisted of 10 per cent dextrose in distilled water together with 10 cc. of aminophylline for each thousand cubic centimeters of dextrose. Five hundred cc. of a 5 per cent solution of sodium bicarbonate was given intravenously and 10 grains (0.65 Gm.) of sodium bicarbonate was given three times a day by mouth. Hot wet packs were applied over the renal areas for two days but were discontinued because of the discomfort which they caused the patient. December 9 both ureters were catheterized to make sure that bilateral obstruction of the ureters had not been caused by clotted blood but the ureters were found to be patent. An indwelling urethral catheter was allowed to remain in the bladder for drainage.

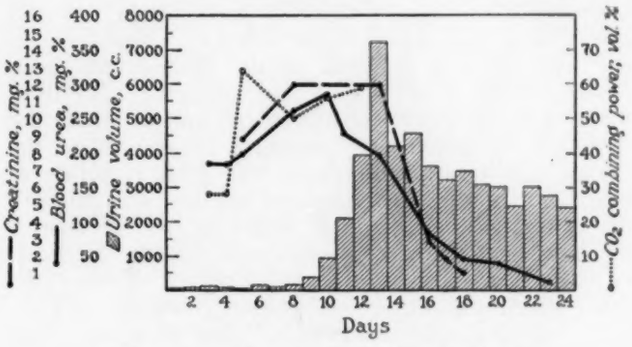
The patient's condition continued to improve under this management and she was dismissed from the hospital December 29, twenty-two days after admission. The physical examination at that time gave essentially negative results, save for breakdown of the episiotomy wound and subinvolution of the uterus, grade 3. The blood urea had returned to normal and the urine was normal save for low specific gravity of 1.009, with albumin grade 1, an occasional erythrocyte, and pus grade 3 due to infection with Streptococcus faecalis which developed subsequent to use of the indwelling catheter.

The patient returned to the clinic March 14, 1939, in excellent health. The results of general physical examination were normal. The urine was also normal and the concentration of blood urea was 32 mg. per hundred cubic centimeters. The patient was seen again in July and stated that she was feeling in perfect health. Physical and laboratory examination gave normal results at this time.

COMMENT

From the obstetric point of view this case is typical both of fatal and of nonfatal bilateral cortical necrosis of the kidney in pregnancy. The following features of our case, which were usually observed in the cases reported in the literature, are as follows: (1) fetal death apparently from abruptio placentae as evidenced by the mild toxemia and severe postpartum hemorrhage from uterine atony, (2) typical anuria nearly complete for eight days, (3) clear mental condition of the patient and freedom from symptoms, except nausea and vomiting, in spite of marked nitrogen retention, (4) usual observations in the blood and urine and (5) lack of any urologic lesion to explain the anuria or tangible toxemia other than the factor of pregnancy.

The blood chemistry and other laboratory observations were followed daily and present the interesting facts recorded in the chart. Two of these are of special



Urinary output and changes in blood chemistry.

note. The concentration of creatinine in the blood was higher than that of any hitherto reported case of cortical necrosis of the kidneys (12.6 mg.). The large number of leukocytes, persistent throughout the phase of oliguria, varied from 20,000 to 27,000 per cubic millimeter and may be a manifestation of the toxicity of this condition.

The renal lesion in cases of anuria is often one of tubular disease and of obstruction by hemolyzed blood, a situation similar to that sometimes encountered after the administration of incompatible blood. The role of quinine given to induce labor in this case cannot be overlooked and one may speculate on it for several reasons. It is well known that quinine, even in small doses, may cause hemolysis of the blood in rare instances and that this tendency is increased in pregnancy, especially among those patients who have a preeclamptic or eclamptic tendency (Terplan and Javert [1]). Terplan and Javert reported a fatal case of hemoglobinuria with oliguria and uremia from quinine in early pregnancy and added similar cases found in the literature.

It is possible that quinine may be the etiologic agent in some cases of bilateral cortical necrosis of the kidneys. The fetal death in such cases (and in ours) is

1. Terplan, K. L., and Javert, C. T.: Fatal Hemoglobinuria with Uremia from Quinine in Early Pregnancy, J. A. M. A. **106**: 529-532 (Feb. 15) 1936.

similar to that ascribed to quinine by King,[2] Gellhorn,[3] McSwiney,[4] Sadler, Dilling and Gemmell [5] and others. Our patient, strangely enough without mention or suggestion from us, stated that she had felt that the quinine was responsible for her illness. She based this assumption largely on the fact that she vividly recalled a pain over the renal areas of some years ago after ingestion of quinine. The pain lasted several hours and was similar to that experienced in her recent illness.

Because of independability and inefficiency as to oxytocic properties, as well as because of rare deleterious effects to the fetus and mother, quinine has not been used for induction of labor in the Section on Obstetrics in the Mayo Clinic for the past ten years.

Ash,[6] Gibberd [7] and others feel that to base a diagnosis of cortical necrosis of the kidneys on gross and microscopic observations is too severe a criterion for diagnosis and that cases of recovery will not be observed except when biopsy of a kidney is performed when the kidneys are decapsulated therapeutically. This may lead to an erroneous conclusion as to the value of decapsulation. The necrosis is not the disease but only one of its prominent characteristics. The etiology is unknown but it may be that an acute infection accompanied by acute nephritis plays such a role. Ash has advanced the term "angioneurotic anuria" to describe more aptly the syndrome; this implies that there is severe local angiospasm in the kidneys. Clinical recovery from cortical necrosis of the kidneys has been reported which could not be distinguished readily from those cases in which death occurred and in which the characteristic lesion was present. In respect to the degree and duration of anuria, the great retention of nitrogen and other such pertinent features, our patient's illness was as typical and as severe as that in most of the cases in which necropsy has confirmed the diagnosis as of true cortical necrosis. With regard to many diseases which depend, for recognition clinically, on even more vague clinical observations than does true renal cortical necrosis, it is not customary to insist that a pathologic diagnosis be made before a clinical one is accepted. It seems that the clinical syndrome of renal cortical necrosis is distinct enough to warrant a presumptive clinical diagnosis. A parturient woman who has an abortion or who gives birth to a dead fetus at a time when signs of toxemia and abruptio placentae are present, and who then experiences anuria or severe oliguria with nitrogen retention in the absence of a urologic lesion, probably has renal cortical necrosis. Convulsions, coma, diarrhea, vomiting and hypertension may or may not be present.

Ash in 1933 reviewed the literature of proved and reasonably presumptive cases of symmetrical cortical necrosis of the kidneys and added two cases of his own. Including his series and those in the literature since his report, we find seventy-four such cases, to which we add our own, making a total of seventy-five. Fifty-three of these patients were pregnant and only one gave birth to a live fetus (twins). Twelve individuals recovered and all but one of these were pregnant. Five of the twelve recoveries were in the last thirteen cases reported since 1933; possibly this indicates the value of recent therapeutic advances.

2. King, E. L.: Does Quinine in the Induction of Labor Have a Deleterious Effect on the Fetus? J. A. M. A. **101**: 1145-1148 (Oct. 7) 1933.
3. Gellhorn, George: Can Quinine Kill the Fetus in Utero? Am. J. Obst. & Gynec. **13**: 779 (June) 1927, quoted by King.[2]
4. McSwiney, S. A.: Is Quinine Induction of Labor Absolutely Harmless? J. Obst. & Gynaec. Brit. Emp. **36**: 90-91, 1929.
5. Sadler, Eileen S.; Dilling, W. J., and Gemmell, A. A.: Further Investigations into the Death of the Child Following Induction of Labor by Means of Quinine, J. Obst. & Gynaec. Brit. Emp. **37**: 529-546, 1930.
6. Ash, J. E.: Bilateral Cortical Necrosis of the Kidneys (Angioneurotic Anuria), Am. J. M. Sc. **195**: 71-86 (Jan.) 1933.
7. Gibberd, G. F.: Symmetrical Cortical Necrosis of the Kidneys: The Importance of Clinical Diagnosis, with an Account of Two Cases of Recovery Under Medical Treatment, J. Obst. & Gynaec. Brit. Emp. **43**: 60-73 (Feb.) 1936.

TREATMENT AND PROGNOSIS

The prognosis in this rare condition is grave; in sixty-three of the seventy-five cases reported to date death has occurred, a mortality of 84 per cent. Many who frequently are called on to treat anuria or severe suppression of urine feel that their efforts are of small avail and that time and degree of renal involvement alone decide the issue of recovery and of death. It cannot be denied that this is true to a large degree and yet we feel that, in borderline cases such as the one which we have reported, various supportive measures may make the difference between recovery and death. We should persist therefore in therapy in spite of discouraging progress.

We feel that these patients should be treated in the same manner as any patient who has acute nephritis with oliguria. It is important to keep the patient warm; hot packs applied over the renal areas, if tolerated, are advisable. Even though edema is present, we feel that fluids should be administered liberally. Usually nausea and vomiting are complicating factors and it is necessary to give fluid intravenously. We prefer 500 cc. of a 20 per cent solution of dextrose together with 10 cc. of aminophylline or 1,000 cc. of 10 per cent dextrose with 10 cc. of aminophylline given morning and afternoon. The total intake of fluid should be between 2,000 and 3,000 cc. a day. Studies of the carbon dioxide combining power, blood urea, creatinine and chlorides should be done. There is a tendency in these cases toward acidosis, which in turn impairs renal function. If the carbon dioxide combining power falls to 40 per cent or less, the administration of 500 cc. of a 5 per cent solution of sodium bicarbonate intravenously is advisable and should be repeated daily until the carbon dioxide combining power is elevated to 50 or 60 volumes per cent. Once this level is reached, it usually can be maintained by the administration of 10 grains (0.65 Gm.) of sodium bicarbonate three times a day by mouth. If hemolysis is present, hematin is precipitated in the tubules of the kidney in an acid medium. Hematin is soluble in an alkaline medium and thus may be dissolved to restore tubular function and urinary excretion.

The patient should be given a diet low in salt and condiments. We prefer to limit the intake of protein to 40 or 50 Gm. a day. We do not feel that the use of diuretics such as potassium nitrate, ammonium chloride or ammonium nitrate is advisable until diuresis has begun, and even then such compounds are of questionable value. Once this type of kidney begins to function, the prognosis is good. Often in such instances credit is given the diuretic agent when really the natural processes of recovery of the kidney have accounted for the improvement. Certainly the more powerful mercurial diuretics are contraindicated and could well destroy all recovery that is taking place. If the patient has become very anemic, transfusions may be tried. However, they should be given in small amounts and cross agglutination of the donor's blood directly with that of the recipient should be performed. Usually the serum protein is normal in these cases. However, it is conceivable that enough blood could be lost through hemorrhage to lower the concentration of protein in the serum to 5 per cent or less, resulting in a decreased

colloidal osmotic pressure, which would produce further retention of fluid, oliguria and edema. If the concentration of serum proteins is less than 5 per cent and if it is found that a low colloidal osmotic pressure is a factor in inhibiting urinary output, a solution of acacia may be given intravenously. Five hundred cc. of a 6 per cent solution of acacia can be given daily or on alternate days until 1,500 cc. (a total of 90 Gm. of acacia) has been given. In this particular case we did not feel that a low colloidal osmotic pressure was a factor and therefore acacia was not given.

Decapsulation was considered but the procedure was dismissed as being too hazardous and as offering too slight an advantage to be attempted. It was felt that added trauma, anesthetic agents and other factors would do more harm than good. We feel that if the toxic or infectious process in the kidneys is not too overwhelming and if the patient has the natural vitality to stand the accompanying uremic condition until the acute process in the kidneys subsides, with modern physiologic aids these patients have the best chance of recovery. We further believe that it is very important to keep the patient free of acidosis, to supply fluids liberally but not in excessive amounts, to administer mild diuretics such as dextrose with aminophylline intravenously as gentle stimulants to diuresis, to avoid in the dietary regimen placing any unnecessary burden on the kidneys such as using salt, condiments and excessive amounts of proteins and to avoid dangerously irritating diuretics.

STRICTURE OF RECTUM SECONDARY TO LYMPHOGRANULOMA VENEREUM

TREATMENT WITH DIATHERMY

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In the past few years a voluminous literature has appeared on the subject of stricture of the rectum secondary to lymphogranuloma venereum. Almost without exception, however, the treatment of this condition has been dealt with superficially and briefly. The obvious reason for this has been the inadequacy of all forms of treatment instituted. An utter feeling of despair has arisen in both patient and physician, so that permanent colostomy has been accepted as the procedure of choice. What a high price this is for the young adult afflicted with an otherwise benign condition that can be reached with the finger! And no hope was entertained by these patients of ever having these colostomies closed after any local form of treatment to the strictured areas. Ault [1] in his review of venereal diseases of the rectum states that "No permanent cure of stricture due to lymphogranuloma venereum has been reported to date."

In treating a patient with an almost complete stricture of the rectum, for which a colostomy was performed two years previously, one of us (H. M.) came upon a form of treatment which was found quite satisfactory in curing these strictures. While no priority in the use of this form of treatment is claimed, since it was suggested in 1925 by Picard [2] for so-called benign strictures of the rectum, its use is here reported in a small number of cases of stricture secondary to lymphogranuloma venereum with complete cure. This preliminary report is offered in the hope of having this treatment more extensively used, in an effort to save these patients from a permanent colostomy.

A few words regarding the etiology of this condition may lead to a better understanding of its clinical manifestations. Like syphilis, lymphogranuloma venereum has an early primary and a late secondary lesion. The first stage is an evanescent painless lesion, consisting of a herpetiform vesicle lasting a few days. Following this lesion and depending on its location, there arise the various manifestations of the condition according to the lymphatic drainage from the particular area involved. Should the lesion occur on the external genitalia in either sex, the lymphatic glands of the groin, which drain these areas, become directly involved (fig. 1).

When the primary lesion is implanted on the posterior vaginal wall or on the cervix, the virus is permitted to drain not to the inguinal glands, where it would be relatively benign, but to the posterior lymphatics lying in the uterosacral ligaments, which skirt each side of the lateral walls of the rectum, as Nesselrod [3] has shown (fig. 2). Here they anastomose with and invade the rectal lymphatics, where an extensive perirectal fibrosis is produced, which is the underlying factor in the stenosis. By reason of this more common implantation in the female, buboes are relatively rare and stricture of the rectum is more frequent.[4] In the male, however, the primary lesion commonly occurs on the surface of the glans or in the anterior urethra, both areas of which drain to the groin. This accounts for the more frequent occurrence of buboes in the male. There being no connecting lymphatics between the glands in the groin and those about the rectum, stricture in the male could not arise by any such spread. In the male a history is usually obtained of direct implantation of the virus in the rectal musoca by sodomy and is accompanied with an ulcerative proctitis. Bensaude and Lambling [5] state that a previous history of this was obtained in 80 per cent of seventy cases of stricture in the male. Sodomy was admitted by two of our male patients. Following this proctitis, which is usually associated with a sanguinopurulent discharge, there results a stenosing fibrosis, leading eventually to a complete stricture.

There are, however, two other possible explanations for the occurrence of the condition in the male. If the infection should spread from a primary lesion in the anterior urethra to the posterior urethra, drainage to the perirectal lymphatics can occur. The drainage from the posterior urethra is similar to that from the prostate gland, and, since the prostatic utricle is embryologically homologous with the uterus, its lymphatic drainage is the same (fig. 3). The virus is therefore carried from the posterior urethra directly back to the perirectal lymphatics, where it produces periadenitis and subsequent perirectal fibrosis. Another possible explanation for the production of rectal stricture in either sex is the development of a primary anal

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1. Ault, G. W.: Venereal Diseases of the Anus and Rectum, Am. J. Syph., Gonor. & Ven. Dis. **21**: 430 (July) 1937.

2. Picard, H.: Treatment of Stricture of the Rectum by Diathermy, Zentralbl. f. Chir. **52**: 1709 (Aug. 1) 1925.

3. Nesselrod, J. P.: The Genito-Anorectal Lymphatics: A Restudy Relative to Lymphopathia Venereum, Proc. Staff Meet., Mayo Clin. **11**: 369 (June 10) 1936.

4. Stannus, H. S.: A Sixth Veneral Disease, London, Baillière, Tindall & Cox, 1933.

5. Bensaude, R., and Lambling, A.: Discussion on the Etiology and Treatment of Fibrous Stricture of the Rectum (Including Lymphogranuloma Inguinale), Proc. Roy. Soc. Med. **29**: 1441 (Sept.) 1936.

lesion with spread of the infection upward to the rectal lymphatics, through the columns of Morgagni (fig. 1).

The great variety of treatments offered for this condition leads one to conclude that there is no one really effective cure. The proctitis, which may precede the stenosis in the male or be associated with the stenosis in both the male and female later in the disease, with secondary fistulas and ulcerations of the mucous membrane, may be remarkably affected by antimony and potassium tartrate, fuadin, sulfanilamide or Frei antigen. This we have found to our satisfaction, as have others (Bloom,[6] Bensaude and Lambling [5] and Shropshear [7]). The pain in the rectum disappears, as do the purulent discharge and tenesmus. But in the cure of the stricture the results with these chemotherapeutic agents have been uniformly discouraging. One would hardly expect the dense fibrous stricture to yield to any form of parenteral injection therapy.

As regards surgical intervention, apart from colostomy little hope can be held out for it in the cure of these patients, for in nearly all cases there is a recurrence of the stricture.[8] Colostomy, when used for the relief of a complete obstruction, has its place in the

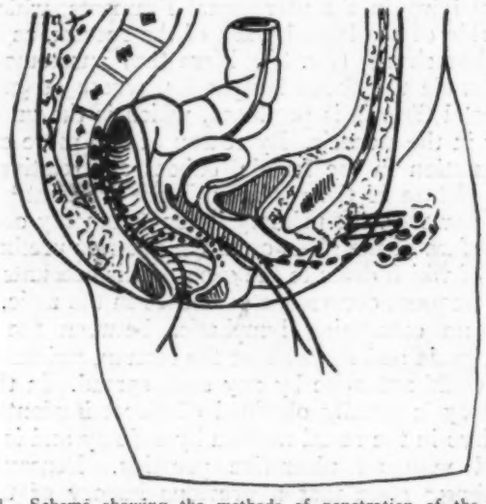

Fig. 1.—Scheme showing the methods of penetration of the virus of Nicolas and Favre. The crosses represent direct intrarectal inoculation leading to the glands of Gerota, the dots inoculation into the posterior vaginal wall leading to the same glands through the rectovaginal septum, the dashes inoculation into the anterior vaginal wall and into the external genital organs leading to the inguinal region with lymphatic stasis.[8]

care of the emergent symptoms of the far advanced stage. But as a form of treatment, with or without abdominoperineal resection of the rectum, it is far from adequate or satisfactory, for it leaves these young victims with the care of a permanent fecal fistula. Even as a preliminary to other forms of treatment for the stricture, with the hope of subsequently closing the colostomy, it is of no avail. Lazzari [9] did this in nine cases and could subsequently close but one.

We suggest a form of treatment which in our hands has been quite successful in the cure of these patients with stricture of the rectum, namely diathermy. This method is here emphasized because of its infrequent use in clinics in this country. Picard,[2] whose report appeared in 1925, was apparently the first to apply this form of treatment to fourteen cases of benign stricture of the rectum, with complete cure after a three year follow-up study. In December 1925 Bensaude and Marchand [10] reported on the use of diathermy with excellent results, after having tried a number of other procedures for these strictures. They, however, did not report its use in any cases in which a colostomy was performed previously but stated that with this treatment the necessity for a colostomy is avoided. In February 1937, however, D'Allaines and Hillemand [11] reported the cure of a lymphogranulomatous stricture of the rectum in a patient who had had a colostomy performed for complete intestinal obstruction, by forty applications of diathermy in association with intravenous injections of sodium salicylate. The stricture melted away and the colostomy was subsequently closed. This is the only report of cure with diathermy in this type of case. One of us (H. M.) tried it in three such cases with complete success and subsequent closure of the colostomy.

Many of these patients had had other forms of treatment previously, such as administration of fuadin, antimony and potassium tartrate and Frei antigen injections, without any effect on the stricture. Following these forms of treatment, diathermy, in association with subcutaneous injections of Frei antigen, was given.[12] The first patient so treated, was given other forms of treatment at the same time, but in view of their known inefficacy it was believed that the diathermy was the effective agent. This, in association with Frei antigen injections, was therefore used in subsequent cases.

The diathermy machine used was of the old long wave type. One pole consisted of a metal plate applied to the lower part of the abdomen, and the other was a metal Hegar dilator which was inserted into the rectum. Increasingly larger sizes of dilators were used as the strictured area increased in caliber and were inserted without pain or any intention of mechanically dilating the stricture. The largest metal dilator that could be comfortably inserted was used. Treatments were given twice a week for twenty minutes each. The patient's tolerance to the diathermy was gradually increased by first using 900 milliamperes of current and then gradually increasing to a maximum of 1,800 milliamperes. Once a week during the period of treatment 0.1 cc. of Lederle mouse brain Frei antigen was injected subcutaneously. It was found that this combined therapy of Frei antigen plus diathermy produced a more rapid dissolution of the stricture than the diathermy alone.

REPORT OF CASES

CASE 1.—M. C., a man aged 28, a Puerto Rican, was admitted to the Cumberland Hospital Oct. 18, 1936, having noticed a gradual onset of increasing constipation with the passage of ribbon-like stools and occasionally blood and pus by rectum, beginning in 1932. Nov. 1, 1934, approximately two years before this admission, he was admitted to the Marine Hospital, Staten Island, N. Y., for the same complaints as well as pain in the rectum, tenesmus and bleeding at defecation. At the Marine Hospital a stricture of the rectum, the opening of which was narrowed to 1 cm. in diameter, was noted 8 cm. above the anal orifice. Dec. 5, 1934, colostomy on the left was performed for the relief of these symptoms. He was discharged from the Marine Hospital Sept. 16, 1935, with a well functioning colostomy and with a slight amount of fecal drainage from the rectum.

On admission to the Cumberland Hospital examination revealed the colostomy on the left and an almost complete

6. Bloom, David: Lymphogranuloma Venereum, New York State J. Med. **38**: 616 (April 15) 1938.
7. Shropshear, George: Sulfanilamide in the Treatment of Strictures of the Rectum Caused by Lymphogranuloma Venereum: Preliminary Report, Illinois M. J. **74**: 153 (Aug.) 1938.
8. Procès verb. et mém. Cong. franç. de chir. **43**, Paris, Oct. 8, 1934.
9. Lazzari, J. H.: The Anorectal Syndrome of Lymphogranuloma, Am. J. Surg. **34**: 316 (Nov.) 1936.
10. Bensaude, R., and Marchand, J. H.: A Particularly Efficacious Treatment of Inflammatory Stricture of the Rectum, Presse méd. **33**: 1588 (Dec. 2) 1925.
11. D'Allaines, F., and Hillemand, P.: Rétrécissement inflammatoire du rectum guérison-fonctionnelle actuelle, Arch. d. mal. de l'app. digestif **27**: 202 (Feb.) 1937.
12. Dr. Henry Cadan, in charge of the physical therapy department at the Cumberland Hospital, and Mr. Rees, physical therapist, assisted in the treatment.

stricture of the rectum 3½ inches (8 cm.) above the anal orifice. The strictured area permitted, at most, the introduction of a fine catheter. Laboratory examinations yielded negative spinal and blood Wassermann reactions, negative gonococcus complement fixation but a strongly positive Frei skin test. X-ray examination by means of barium sulfate instilled into the distal

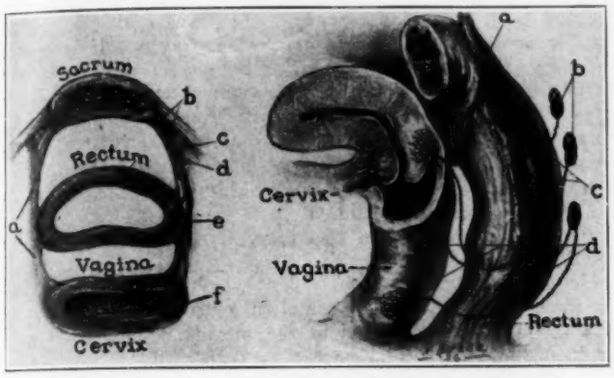

Fig. 2.—Left: arrangement of lymphatic structures in the female; *a*, sacrorectogenital aponeurosis; *b*, lateral sacral nodes; *c*, collecting trunks; *d*, rectal stalk; *e*, rectal plexus of origin; *f*, vaginal or cervical plexus of origin. Right: *a*, peritoneal reflection; *b*, lateral sacral nodes; *c*, collecting trunks; *d*, plexuses of origin (from Buie's Proctology).

loop through the colostomy opening revealed a pinhead stricture of the ampulla of the rectum for a distance of about 1 inch (2.5 cm.; fig. 4).

November 9, about three weeks after admission, a course of fourteen injections of antimony and potassium tartrate and fuadin was started. No evident improvement was noted in the size of the stricture. Subsequently, therefore, metal Hegar dilators were passed through the strictured area with some difficulty, beginning with a 5 mm. dilator, and the diathermy treatments were started. The metallic dilators were gradually increased in size as the diameter of the lumen increased until a 24 mm. dilator was used. During this time the patient was also given 0.1 cc. of Frei mouse brain antigen subcutaneously, twice weekly. After having received a total of seventy-six injections of this Frei antigen subcutaneously and a total of ninety-four diathermy treatments, the patient's condition improved markedly and the rectum returned to normal caliber. Oct. 11, 1937, therefore, the colostomy was closed. The patient did well postoperatively and was discharged October 25. At this time he was having bowel movements regularly by rectum, with no more drainage from the site of the previously existing colostomy. He subsequently received no further diathermy treatments to the rectum.

Fig. 3.—Arrangement of lymphatic structures in the male: *a*, urethral plexus of origin; *b*, prostatic plexus of origin; *c*, collecting trunks; *d*, lateral sacral nodes (from Buie's Proctology).

He was given a follow-up examination Dec. 21, 1938, more than one year later. At this time he was feeling fine and having regular bowel movements without use of cathartics. The colostomy wound was entirely closed. Rectal digital examination revealed an entirely normal rectal mucosa, without any evidence of a previously existing stricture. Barium sulfate enema examination at this time revealed a most marked increase in the caliber of the lumen of the bowel (fig. 5). This is in marked contrast to the previously existing pinpoint opening prior to the institution of treatment (fig. 4).

CASE 2.—D. W., a white man aged 45, was admitted to the Cumberland Hospital March 15, 1936, with the complaints of a purulent discharge and pain in the rectum of six months' duration. A hemorrhoidectomy and fistulectomy had been performed six months previously for the same complaints. Rectal examination on admission revealed a tender mass 1 inch from the anal orifice, which bled easily, and a circular stricture of the rectum at this location. A Frei skin test was positive, and a blood Wassermann reaction was negative. A biopsy of the mass was performed, and the growth was reported as a granuloma. The patient was given nine intramuscular injections of fuadin and was discharged from the hospital with the stricture unimproved. Subsequently he was observed in the outpatient department, where he was given forty-two intravenous injections of antimony and potassium tartrate and nine additional intramuscular injections of fuadin, without any benefit. Frei skin tests were repeatedly positive.

On examination June 2, 1938, he still complained of a purulent discharge from the rectum and marked difficulty in defecation. At this time he was found to have a marked stricture of the

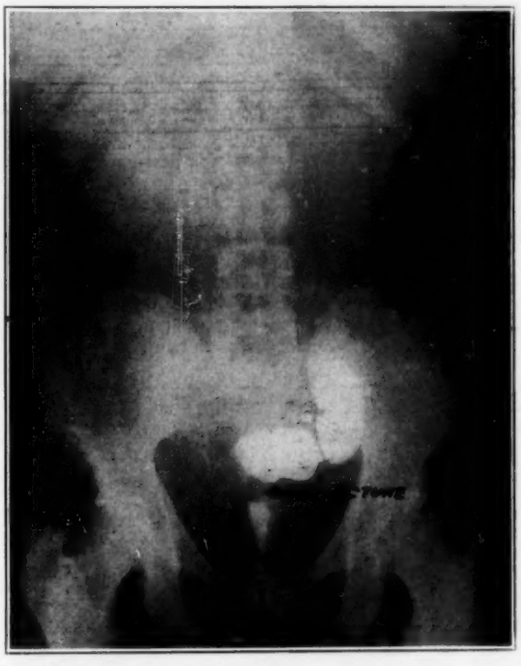

Fig. 4 (case 1).—Extent of stricture of rectum before treatment.

rectum which would not admit the introduction of the tip of a finger. Diathermy treatments, beginning with a 10 mm. Hegar dilator and subcutaneous injections of 0.1 cc. of Frei antigen were started.

He was last seen in June 1939, after having had 103 diathermy treatments and fifty subcutaneous injections of 0.1 cc. of Frei antigen. At this time the stricture was found to have completely resolved, and the rectum permitted the introduction of the finger or a 26 mm. Hegar dilator with ease. The patient was having regular bowel movements without any discomfort, no longer had any rectal discharge and felt much improved for the first time.

CASE 3.—J. B., a Negro woman aged 30, was admitted to the Cumberland Hospital Oct. 19, 1938, with swelling of the perineum, which had increased for the past five years. She also had become markedly constipated and was passing pencil size stools and blood by rectum during this period. Physical examination on admission revealed a marked hypertrophic elongation of the left labium minus about 5 inches (13 cm.) long and containing several discharging fenestrations. Digital rectal examination revealed the presence of a marked stricture of the rectum, which barely admitted the introduction of the little finger 1 inch from the anal orifice. The blood Wasser-

mann reaction was negative, but a Frei skin test was positive. The erythrocyte sedimentation rate was ten minutes for 24 mm. A barium sulfate enema examination revealed a marked stricture of the lower third of the rectum over a distance of about 2 inches (5 cm.); figure 6.

Fig. 5 (case 1).—Appearance of rectum after treatment.

Because of the inconvenience of the discharging redundant tissue, the hypertrophied left labium minus was resected. Pathologic examination revealed it to be a papilloma with chronic inflammation. Because of the marked rectal stricture,

Fig. 6 (case 3).—Extent of stricture of rectum before treatment.

November 19, diathermy treatments were started, beginning with a 12 mm. Hegar dilator. She was then discharged to the clinic for further treatment. Subsequently, she received a total of forty-two such treatments and twenty-one injections of Frei antigen. After this she felt much improved and was able to have normal size bowel movements with ease, without pain or bleeding.

On follow-up examination April 8, 1939, she was found to have a completely normal, smooth rectal lumen at the site of the previously existing nodular stricture, which now easily permitted the introduction of the whole finger or a 26 mm. Hegar dilator. Barium sulfate enema roentgenograms taken at this time revealed a most marked alteration in the caliber of the bowel lumen (fig. 7).

CASE 4.—J. F., a white man aged 44, was first admitted to the Cumberland Hospital Jan. 21, 1936, having noted increasing difficulty in moving the bowels for the past three years. He attributed this complaint to a fistulectomy and hemorrhoidectomy performed three years previously at another hospital. Examination on admission revealed a rectal stricture 5 cm. from the anal orifice which just about permitted the introduction of the finger or a No. 18 sound. He was discharged from the hospital unimproved after a single manual dilation. A Frei skin test was not done at this time. The blood Wassermann reaction, however, was negative.

He was seen again Feb. 5, 1938, at which time he was having the same complaints. On examination, a marked rectal stricture was found which would admit the introduction of a 10 mm.

Fig. 7 (case 3).—Appearance of rectum after treatment.

Hegar dilator. A Frei skin test was now positive. At this time diathermy treatments to the rectum and Frei antigen injections were started.

On follow-up examination Jan. 4, 1939, after a total of fifty-one diathermy treatments and twenty-five Frei antigen injections, the stricture was found to have completely resolved. The rectum could now admit a 26 mm. Hegar dilator without any pain or discomfort. He was having bowel movements by rectum without the use of cathartics and was feeling fine. Treatments were therefore discontinued. He was last seen October 20, at which time he had no complaints and examination failed to reveal any sign of previously existing stricture and nodulations.

CASE 5.—M. S., a Negro woman aged 44, was first admitted to the Cumberland Hospital Dec. 1, 1935, with markedly increasing constipation and the passage of ribbon-like stools and occasionally blood from the rectum, of three years' duration. Examination at this time revealed numerous perianal fistulas and a stricture of the rectum 1 inch from the anal orifice which was unable to admit a pencil. Purulent material was seen exuding from the several openings about the anus. A Frei skin test was positive and the blood Wassermann reaction was negative. The patient was subjected to a fistulectomy and manual rectal dilation under anesthesia and was discharged from the hospital improved.

One and a half years later she was seen in the outpatient department, with the same complaints and with the previously existing marked rectal stricture. She was given nine intramuscular injections of 5 cc. of fuadin without any relief.

April 24, 1938, she was readmitted to the hospital with the complaint of marked tenesmus and the passage of stringlike stools. At this time she had a stricture of the rectum which barely admitted the tip of the small finger. A Frei skin test was again strongly positive. May 3 colostomy on the left was performed for the relief of her obstructive symptoms. Subsequently, during her stay in the hospital, diathermy treatments, starting with an 8 mm. Hegar dilator, and Frei antigen injections were given. After eight treatments she was discharged, much improved, August 5, at which time she was having bowel movements by rectum and her stricture was found to admit a finger with ease. She had a slight amount of fecal drainage from her colostomy wound at this time.

Subsequent to discharge from the hospital she received twenty additional diathermy treatments and ten subcutaneous injections of 0.1 cc. of Frei antigen. Follow-up examination of the rectum October 5 revealed the stricture to have resolved, and the area admitted a 26 mm. Hegar dilator with ease. The patient felt fine, had no drainage from her colostomy opening and was having bowel movements by rectum without the use of a cathartic. She was advised readmission to the hospital for the closure of the colostomy, which was performed on Jan. 19, 1939. She was discharged February 26, having normal bowel movements and no further fecal drainage from the site of the previous colostomy opening. She subsequently received twenty diathermy treatments and ten injections of Frei antigen, after which her rectum no longer had the marked nodulations, was of normal caliber and easily permitted the introduction of the finger.

118 Eighth Avenue.

ERYSIPELOTHRIX ENDOCARDITIS: A COMPLICATION OF ERYSIPELOID

REPORT OF A CASE WITH NECROPSY

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ST. LOUIS
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"Erysipeloid" is the term first applied by Rosenbach [1] in 1884 to a self-limited skin infection characterized by a slowly progressive, painful erythema beginning at the site of infection and extending peripherally as the central area fades. He observed this infection on the hands of kitchen workers, butchers and those who handle fish and game. This disease is now known to be caused by Erysipelothrix rhusiopathiae, the organism of swine erysipelas, and is identical with the cutaneous infection generally known to the public as "fish poisoning" acquired from handling either fresh or salt water fish. Its recognition as a significant occupational disease of commercial fishermen, abattoir workers (Klauder, 1938 [2]) and bone button cutters [3] has been reported.

A case of bacterial endocarditis caused by Erysipelothrix rhusiopathiae is reported because it is a rare fatal complication of erysipeloid infection and no similar bacteriologically proved case has been found in the literature. Attention will be called to a similar form of Erysipelothrix infection with bacterial endocarditis seen in swine complicating swine erysipelas.

From the Mallory Institute of Pathology, Boston City Hospital.

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2. Klauder, J. V.: Erysipeloid and Swine Erysipelas in Man: A Clinical and Bacteriologic Review; Swine Erysipelas in the United States, J. A. M. A. **86:** 536 (Feb. 20) 1926. Klauder, J. V.; Righter, L. L., and Harkins, M. J.: A Distinctive and Severe Form of Erysipeloid Among Fish Handlers: Report of Clinical and Laboratory Studies; Demonstration of the Bacillus of Swine Erysipelas, Arch. Dermat. & Syph. **14:** 662 (Dec.) 1926. Klauder, J. V., and Harkins, M. J.: Erysipeloid in the United States: Clinical and Laboratory Study, J. A. M. A. **96:** 1205 (April 11) 1931. Klauder, J. V.: Erysipeloid as an Occupational Disease, ibid. **111:** 1345 (Oct. 8) 1938.

3. McGinnes, G. F., and Spindle, Forrest: Erysipeloid Condition Among Workers in Bone Button Factory Due to Bacillus of Swine Erysipelas, Am. J. Pub. Health **24:** 32 (Jan.) 1934.

REPORT OF CASE

Clinical History.—R. D., a white man aged 37, American, married, a lobster fisherman, entered the hospital Oct. 1, 1938, complaining of continuous pain in the right leg of four days' duration. For two months before admission there had been progressive weakness, malaise, occasional chilly sensations and a loss of 20 pounds (9 Kg.) in weight. One month before entry a nonsuppurative ulceration, approximately 1 cm. in diameter, appeared on the upper lip accompanied by moderate swelling and erythema. It healed in one week with sulfur ointment therapy. There had been no other cutaneous lesions.

Twenty years previously (in 1918) the patient was refused army enlistment, being told that he had rheumatic heart disease. Cardiac symptoms had never been noted. He had led an active life including some manual labor. No migratory pains in the joints or involuntary movements suggestive of chorea were recalled. In the right shoulder there had been periodic stiffness with pain for the past four years. Other symptoms referable to the joints were not noted.

Large quantities of hard liquor had been consumed for many years, indulgence being excessive for the two months preceding entry to the hospital. His first employment as a lobster fisherman, which necessitated the manual handling of large quantities of live lobsters, occurred four months before admission. Injuries or infections of the hands during this time were not mentioned in the history and were not known to the patient's family, according to information given after death.

Physical Examination.—The patient was well developed but poorly nourished; he was acutely distressed with pain in the right lower leg, made worse by movement. The right foot, including the lower third of the tibia, was cold and blanched. The right dorsalis pedis pulse was easily felt, but the right posterior tibial pulse was just perceptible. A dry warm skin was noted, but no excoriations, scars or areas of erythema. The heart was enlarged to percussion with the left border of dulness 9 cm. from the midsternal line in the sixth interspace. Supracardiac dulness measured 7.5 cm. The heart sounds were distant and of poor quality with the pulmonic second sound louder than the aortic. A systolic thrill was felt in the aortic area. There was a precordial systolic murmur heard loudest at the base and transmitted to the vessels of the neck. A long blowing diastolic murmur was heard at the apex. The pulse was full, bounding and of the Corrigan type. Small nontender lymph nodes were palpated in the right axilla and both groins. Slight clubbing of the fingers was noted.

The blood pressure was 120 mm. of mercury systolic and 40 mm. diastolic, the pulse rate 100, the temperature 101.5 F. and the respiratory rate 25 per minute.

Laboratory Examination.—Three urine examinations revealed a few white blood cells and on one occasion a few red blood cells but never any albumin or casts. On admission the erythrocyte count was 3,800,000 and the hemoglobin content 70 per cent. The erythrocyte level fell steadily to 2,000,000 and the hemoglobin to 40 per cent two days before death. The white blood cells fluctuated between 9,200 and 6,400. On admission the differential count was 72 per cent neutrophils, 10 per cent lymphocytes, 2 per cent eosinophils and 16 per cent monocytes. A note concerning the smear said that the monocytes appeared vacuolated. The next smear, taken eight days later, and all subsequent examinations showed a normal distribution of cells, the highest monocyte percentage being 4. A blood Hinton test was negative. The nonprotein nitrogen content of the blood was 24 mg. per hundred cubic centimeters. The icteric index taken the day of death was 15. Six blood cultures all showed a small, slender, straight or slightly curved gram-positive bacillus.

Course of Illness.—After three days of local heat therapy the right leg became asymptomatic. The pulse remained elevated and the temperature spiked between 90 and 103 F. Transfusions, sulfanilamide and ultraviolet therapy had no appreciable effect on a steady downhill course marked by progressive weak-

ness, anorexia, emaciation and anemia. Petechiae were never observed. Death occurred on the twenty-sixth hospital day.

Clinical Diagnoses.—These were subacute bacterial endocarditis and rheumatic heart disease with mitral and aortic stenosis and insufficiency.

Necropsy.—Necropsy was performed five hours after death. The body was well developed but poorly nourished, with slight pitting edema of both ankles and a slight icteric tint to the scleras. The lungs, gastrointestinal tract, pancreas, kidneys, adrenals, bladder, aorta and bone marrow were grossly not remarkable. The significant observations were as follows:

Each pleural cavity contained approximately 1,000 cc. of clear straw-colored fluid. The visceral pericardium was adherent to the parietal pericardium by easily freed fibrinous adhesions. The surfaces were light yellowish pink and were covered with a finely granular deposit of fresh reddish fibrin.

Fig. 1.—Heart showing the aortic valve with bulky vegetations. *A*, two abscess cavities in the subepicardial fat and myocardium; *B*, vegetations invading the mural endocardium; *C*, bicuspid arrangement of valve, right and left commissures, and *D*, mycotic aneurysm invading the aortic ring.

The heart was nearly twice normal size, weighing 500 Gm. Three small, deep pinkish yellow, finely granular and firmly adherent vegetations were seen on the free margin of the anterior leaflet of the mitral valve, the largest measuring 0.5 cm. in diameter. Two of the chordae tendineae had vegetations, each 0.2 cm. in diameter and similar in all respects to those on the mitral valve. The mitral cusps were not thickened or distorted and the chordae tendineae were delicate, thin and threadlike. There appeared to be but two aortic cusps, since only two commissures could be made out. The cusps were largely replaced by fungating, slightly friable and coarsely granular, deep pinkish yellow vegetations reaching a maximal thickness of 1 cm. The right commissure was obscured by vegetations that extended laterally 1 cm. into each aortic sinus. The vegetations were particularly bulky in this area, invading the sinus wall, the ring and the adjoining muscle for a depth of 1 cm. A section through the left aortic sinus, valve cusp and myocardium revealed two small abscess cavities, 0.5 cm. and 0.3 cm. in diameter respectively, containing semifluid, pale, brownish yellow pus. The smaller cavity was in the subepicardial fat and the larger, partly in the myocardium, lay close to the bulky vegetation of the cusp. Adjoining and below the left commissure an area of endocardium measuring 1.5 by 1 cm. was covered with coarsely granular, pinkish yellow vegetations which were inseparably attached and appeared to penetrate the subjacent myocardium.

The spleen was twice normal size, weighing 400 Gm., and contained a small (4 cm.), moderately firm, fresh infarct covered with a thin layer of yellowish fibrin.

Anatomic Diagnoses: These were subacute bacterial endocarditis of aortic and mitral valves with mycotic aneurysm and abscess formation, bicuspid aortic valve, infarct of spleen, fibrinous pericarditis and hydrothorax.

Microscopic Observations.—Heart: A section through the aortic ring and adjacent cusp stained by the phloxine-methylene blue method revealed the cusp markedly thickened with layers of organizing fibrin containing large clumps of blue staining bacilli. Two abscesses containing necrotic material, polymorphonuclear leukocytes and macrophages were present within the adjacent myocardium. Fibrosis was marked around the abscesses. A Gram-Weigert stain of this section revealed gram-positive bacilli scattered singly and in large clusters throughout the vegetation on the cusp. In scattered collections of macrophages the bacilli were heavily phagocytized, outlining the cells as deep blue-black bodies. No bacilli were seen within or surrounding the abscess cavities previously described.

A section of the myocardium showed the pericardial surface covered with a thin layer of fibrin containing neutrophils and macrophages. Several small foci of neutrophils were scattered throughout the myocardium.

Spleen: Approximately one third of the section showed a necrotic infarct which was demarcated from the viable tissue by a broad zone of fibrin and polymorphonuclear leukocytes. The centers of many of the malpighian corpuscles had large deposits of fibrin containing scattered neutrophils. A Gram-Weigert stain of this section revealed no organisms.

Liver: Marked central necrosis of the liver lobules was present with only a peripheral fringe of viable cells.

Kidney: Several glomeruli contained small fibrin thrombi in the capillaries and, in some instances, exudation of fibrin and neutrophils into the glomerular space and adjoining tubules.

Testis: No adult spermatozoa were found. A small arteriole beneath the tunica contained a thrombus of dense fibrin with a growth of endothelium over the surface. One small focal area of neutrophils and fibrin was present.

Microscopic Diagnoses: These were abscesses of the aortic ring with local interstitial myocarditis, and acute focal embolic lesions of the myocardium, kidney (glomeruli) and testis.

Bacteriology: Cultures of the heart's blood and an endocardial vegetation yielded a small, slender, straight or slightly curved gram-positive bacillus. A culture of the pericardium was negative.

BACTERIOLOGY

The organisms grown from the six blood cultures, the heart's blood and the endocardial vegetation were identical morphologically, culturally and serologically with a known strain of Erysipelothrix rhusiopathiae that was sent us from the Pathological Division of the Bureau of Animal Industry of the United States Department of Agriculture in Washington, D. C. The following characteristics were observed:

Morphology.—The organism was a small, slender, straight or slightly curved rod, from 1.5 to 1 micron in length and from 0.3 to 0.4 micron in width, arranged singly and in small groups or in chains. It was nonmotile and non-spore forming, gram positive and nonacid fast. In old broth cultures and from intermediate rough colonies (described in the following section) from blood agar plates the organism grew in long chains and interlacing filaments of variable length. Some filaments, staining irregularly by the Gram method, appeared somewhat beaded.

Cultural Characteristics.—Good growth on blood, on plain and chocolate agar and on Löffler's blood serum was obtained under both aerobic and anaerobic conditions. Typical smooth colonies appeared after forty-eight hours (at 37 C.) and were round, convex and water clear with slightly undulate edges. They varied from 0.1 to 0.8 mm. in diameter. Typical rough colonies as described by Barber [4] were never observed. The rough forms noted corresponded to the intermediate rough colonies described by this author. Intermediate rough colonies from old culture transplants were broader and flatter with slightly dentate edges and raised centers. These colonies measured about 0.6 to

4. Barber, Mary: A Comparative Study of Listerella and Erysipelothrix, J. Path. & Bact. **48**: 11 (Jan.) 1939.

1 mm. in diameter. Further incubation of intermediate rough colonies revealed little change in the size of the colony, but in some instances a low, spreading type of growth extended peripherally for varying distances up to 1.5 mm.

Colonies on blood agar plates were surrounded by a small zone of greenish hemolysis (alpha type), and a somewhat smaller zone of peculiar greenish discoloration was noted on chocolate agar.

In plain, ascitic and blood broth turbidity appeared in twenty-four hours. Smooth forms produced a uniform turbidity with a minimal amount of sediment, while the intermediate rough forms produced a flocculent type of growth with a large amount of sediment.

In gelatin stab cultures, smooth colonies produced a lamp brush type of growth along the stab in one week. Intermediate rough colonies grew more irregularly, with "bursting bomb" figures. No liquefaction was obtained.

Virulence.—The virulence of the organism was studied in mice, guinea pigs and rabbits.

White mice inoculated intraperitoneally with twenty-four hour broth cultures died in from eighteen to twenty-four hours. The organism was regularly seen on direct blood smear and was recovered in pure culture from the peritoneal fluid and the heart's blood. Serial dilutions of twenty-four hour broth cultures were fatal for white mice (observed in two series) up to and through a 1:50,000 dilution (equivalent of 0.00002 cc. of the original twenty-four hour broth culture).

Three guinea pigs survived intraperitoneal injections of 2 cc. of forty-eight hour broth cultures with no demonstrable effect.

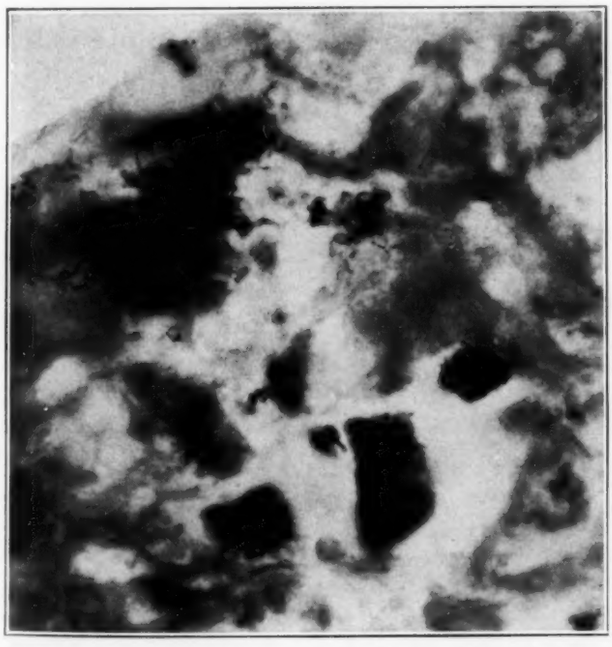

Fig. 2.—Gram-Weigert stain of an endocardial vegetation. Bacilli are shown as interlacing filaments. In the lower right corner macrophages are seen with ingested bacilli. Slightly reduced from a photomicrograph with a magnification of 800 diameters.

Three rabbits inoculated intravenously with 2 cc. of a forty-eight hour broth culture all survived. One animal became sick and lost weight but recovered completely in two weeks. The others showed no demonstrable effect.

Serum Reactions.—Two rabbits that had been previously inoculated intravenously with 2 cc. of a forty-eight hour broth culture were immunized as follows: Injections of 0.5, 1, 2 and 4 cc. of forty-eight hour living broth cultures of our organism were given intravenously at four day intervals. A third rabbit was immunized by the same procedure with the known strain of Erysipelothrix rhusiopathiae. Serum from the rabbits immunized with our organism agglutinated known

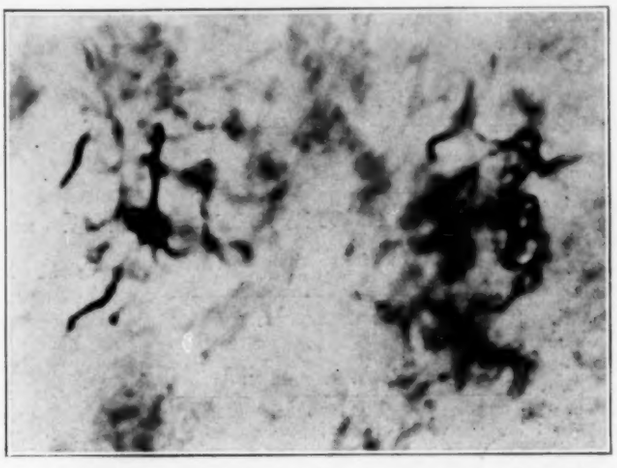

Fig. 3.—Higher magnification of the section in figure 2. Bacilli are clearly shown as long filaments with slight nodular irregularities suggesting beading. Slightly reduced from a photomicrograph with a magnification of 2,000 diameters.

organisms in dilutions reaching 1:1,600. Serum of the rabbit immunized with the known organisms agglutinated our organisms in dilutions reaching 1:1,600. The same antigens were not agglutinated by normal rabbit serum used as a control. The results are shown in table 1.

Biochemical Reactions.—Fermentation reactions were done by the method suggested by Deem and Williams [5] with the extract from autoclaved swine blood corpuscles. The four sugars fermented were the same four that were constantly fermented by all thirty-seven strains of Erysipelothrix rhusiopathiae with which these investigators worked. The results are shown in table 2.

THE ORGANISM

Erysipelothrix rhusiopathiae is classified by Bergey [6] among the so-called "higher bacteria" of the order Actinomycetales. There are three generally accepted strains: swine, human and mouse. These strains differ somewhat in morphology and virulence as the result of prolonged passage in their respective hosts. The bacillus is widely disseminated throughout the animal kingdom as a saprophyte of decomposing plant and animal material. As a "facultative parasite" it has been isolated from the tonsillar secretions in 50 per cent of healthy swine by Glässer [7] and Pfeiler.[8] Brunner [9] recently reported its isolation from fish but concluded that fish only harbor the organism since they show no sign of disease. Virulence and species specificity are extremely variable. The organism has the capacity to change suddenly from a harmless saprophyte into a pathogenic parasite. Serial passage in pigeons increases

5. Deem, A. W., and Williams, C. L.: Fermentation Reactions of Erysipelothrix Rhusiopathiae, J. Bact. **32**: 303 (Sept.) 1936.
6. Bergey, D. H.: Bergey's Manual of Determinative Bacteriology, ed. 4, Baltimore, Williams & Wilkins Company, 1934, p. 533.
7. Glässer: Die Krankheiten des Schweines 1912, quoted by Arnholz, F.: Zur Pathologie und Therapie des Erysipeloids, Arch. f. klin. Chir. **135**: 736 (April) 1925.
8. Pfeiler, A. H., quoted by Schnürer, J.: Deutsche tierärztl. Wchnschr. **35**: 161 (March 12) 1927.
9. Brunner, G.: Experimentalle Untersuchungen über Schweinerotlaufbakterien bei Fischen, Zentralbl. f. Bakt. (pt. 2) **97**: 457, 1938.

virulence for all species, while passage in rabbits decreases virulence for swine. Pigeons and white mice are highly susceptible to experimental inoculation, rabbits and guinea pigs considerably less so. Man and swine are said to be relatively immune.

THE INFECTION IN SWINE

Swine erysipelas was first recognized as a definite entity and differentiated from anthrax in 1882 by Pasteur [10] and his co-worker Thuellis, who first described

TABLE 1.—*Agglutination Reactions*

Antigen	Serum from Rabbit 1, Immunized with Our Organism						Control in Salt Solution	Serum of Control Rabbit	
	1:100	1:200	1:400	1:800	1:1,600	1:3,200		1:10	1:100
Saline suspension of known strain of Erysipelothrix rhusiopathiae	4+	4+	4+	4+	4+	—			
	Serum from Rabbit 2, Immunized with Our Organism								
	1:100	1:200	1:400	1:800	1:1,600	1:3,200			
	4+	4+	4+	4+	4+	2+	—	—	—
	Serum from Rabbit 3, Immunized with Known Strain								
Saline suspension of our organism	1:100	1:200	1:400	1:800	1:1,600	1:3,200			
	4+	4+	4+	4+	4+	2+	—	—	—

and prepared a successful vaccine from organisms isolated from characteristic cutaneous lesions. The vaccine was prepared by serial passage of the organisms in rabbits, which these authors observed decreased its virulence for swine. While organisms so prepared are attenuated for swine, they still are virulent for man, and very severe infections have been reported in veterinarians accidentally infected with such cultures. Subsequent clinical and pathologic studies have divided this disease roughly into an acute form and several chronic manifestations. The disease in swine has been described in detail by Van Es and McGrath.[11] Briefly, in the acute form of the disease the picture is that of acute sepsis, with fever, loss of appetite, patchy ecchymotic discolorations of the skin and painful swelling of the joints. Death may result from increasing respiratory distress with pulmonary edema in from one to four days, or the acute symptoms may completely subside. The mortality in this form ranges between 50 and 100 per cent.

The chronic forms of infection may be continuous with the acute attack or may insidiously manifest themselves after several weeks of apparent good health. Chronic proliferative arthritis frequently with osteitis, an urticarial cutaneous inflammation commonly called "diamond skin," and bacterial endocarditis are the most commonly recognized chronic manifestations. Postmortem observations on animals dying of endocarditis reveal most frequently on the mitral valve, and to a less extent on the aortic valve, large, wartlike or cauliflower appearing reddish yellow vegetations. The vegetations in all instances show a marked tendency to attack and invade the mural endocardium.[12]

The infection is commonly acquired through the gastrointestinal tract, but infection from skin abrasions is known to occur.

THE INFECTION IN MAN

Infections as a rule follow cutaneous abrasions or penetrating injuries to the hands. Infection through the gastrointestinal tract is exceedingly rare, but the case reported by Fiessinger and Brouet [13] of infection following the ingestion of infected salt pork leaves little doubt as to the possibility of this route of infection. Following an incubation period of from one to five days there develops at the site of injury a sharply defined, slightly elevated zone of erythema with a characteristic purplish red coloration which slowly extends peripherally as the central area fades. The purple red and the slow progression of the infection differentiate it from true erysipelas. Extension above the wrists is rare, and lymphangitis and lymph node involvement with constitutional symptoms are seen only with the most virulent infections. Self limitation with spontaneous recovery in from one to four weeks is the rule. Suppuration is never observed. Attempts to recover the organism from characteristic cutaneous lesions by the usual methods of culturing small amounts of serum from the wound or aspirated material are always unsuccessful. However, culture of a small section of skin taken from an area of erythema will usually grow the organisms. Particularly severe forms are seen in veterinarians accidentally infected with virulent cultures. Klauder, Righter and Harkins [2] observed a severe form of erysipeloid disease in commercial fishermen of the Atlantic seaboard which they concluded was comparable to the severe form of erysipeloid disease observed from swine infections. Milder forms have been observed

TABLE 2.—*Biochemical Characteristics*

	Our Organism	Known Strain of Erysipelothrix Rhusiopathiae
Monosaccharides		
Pentoses		
Arabinose	—	—
Xylose	—	—
Hexoses		
Dextrose	Acid, no gas	Acid, no gas
Galactose	Acid, no gas	Acid, no gas
Fructose	Acid, no gas	Acid, no gas
Mannose	—	—
Disaccharides		
Sucrose	—	—
Maltose	—	—
Lactose	Acid, no gas	Acid, no gas
Trisaccharides		
Raffinose	—	—
Polysaccharides		
Starch	—	—
Inulin	—	—
Dextrin	—	—
Alcohols		
Dulcitol	—	—
Glycerol	—	—
Mannitol	—	—
Glucoside		
Salicin	—	—
Litmus milk	Slight acid	Slight acid
Nitrate reduction	—	—
Catalase	—	—

from such sources as old cheese, infected game and commercial meat. Infection has been reported from such unusual sources as from injury to the hand on a stone in a dry creek, from carrying an opossum by the tail wrapped around the fingers, from skinning a rabbit and other contacts with rabbits by rabbit breeders, from handling recently thawed fish by an attendant in a zoological garden, from performing an autopsy on a dead animal in a zoological garden, from the sting of a jellyfish, from handling a dogfish (Squalus acanthias)

10. Pasteur, Louis: Extract d'une lettre de M. Pasteur à M. Dumas: physiologie pathologique; sur le rouget, ou mal rouge des porcs, Compt. rend. Acad. d. sc. **2**: 1120, 1882.

11. Van Es, L., and McGrath, C. B.: Swine Erysipelas, Research Bulletin 84, College of Agriculture, University of Nebraska.

12. Coombs, C. F.; Hadfield, G., and Henson, G. E.: Endocarditis of Swine Erysipelas and Its Relation to Cardiac Infections of Man, Proc. Roy. Soc. Med. (Sect. Compar. Med.) **19**: 13 (Feb.) 1926.

13. Fiessinger, Noël, and Brouet, Georges: Rouget du porc chez l'homme à forme porcine et d'origine digestive, Presse méd. **42**: 889 (June 2) 1934.

which apparently had lain on the beach for a long time and dried thoroughly in the sun, from the prick of a spine of a dried stuffed fish which was mounted and used as an ornament (Klauder and Harkins [2]), from infected sheep [14] and from injury from a fish hook.[15]

Acute [16] and chronic arthritis [17] have been reported, the former as a concomitant complication and the latter as a late sequela of an original cutaneous infection. Endocarditis in man will be discussed under the review of the literature.

For a detailed description of erysipeloid infection the reader is referred to the papers of Klauder and his collaborators.[2]

REVIEW OF THE LITERATURE

Mention of endocarditis as "a very rare complication" of swine erysipelas infection in man was made by Van Es and McGrath,[11] Klauder, Righter and Harkins,[2] Klauder [2] (1926) and Rahm.[16] However, Klauder was the only author who cited any reference, and that was to the two cases reported by Gunther.[18] One of these cases is discussed at some length with postmortem observations in a German veterinary journal,[19] not as a case of endocarditis complicating swine erysipelas infection in man but as a legal report involving insurance compensation. The patient was an Austrian veterinarian aged 29 who accidentally infected himself while vaccinating swine. A localized cutaneous infection at the site of injury was followed in three weeks by chills and fever, progressive weakness and signs of heart disease and in three months by death. At necropsy a thrombus-like deposit was noted on the mitral valve. The case was lost by the patient's widow, presumably because the physician who performed the necropsy testified that pyogenic bacteria had entered the circulation through the skin abrasion and attacked the mitral valve, since swine erysipelas infection was not known to be transmissible to man.

It is interesting to note that Gunther, having a more complete knowledge of swine erysipelas infection in man, reported this case and a similar case of an Austrian veterinarian with an identical story of accidental infection followed by sepsis, evidence of heart disease, and endocarditis observed at necropsy. Bacteriologic studies were lacking, however, in both cases. While Gunther reported these cases as endocarditis complicating swine erysipelas infection in man, he apologetically concluded that, because no causative organism was identified, the possibility of streptococcic endocarditis could not be excluded.

The fatal case reported by Prausnitz [20] of a 10 year old girl with a previously known congenital heart lesion, with sepsis and cutaneous and articular manifestations, should be added as another probable case of endocarditis caused by Erysipelothrix rhusiopathiae. Blood cultures repeatedly yielded an organism positively identified as "erysipeloid bacillus" (Erysipelothrix rhusiopathiae). Proof of the endocarditis was lacking, as permission for autopsy was refused.

14. Friedman, E.: Sur un cas de transmission à l'homme du rouget du mouton, Bull. méd., Paris **47:** 623 (Sept. 30) 1933.

15. Pautrier, L. M.: Erysipéloïde consécutif à une piqûre d'hameçon, Bull. Soc. franç. de dermat. et syph. (Réunion dermat., Strasbourg) **40:** 192 (Feb.) 1933.

16. Rahm, H.: Zur Schweinrotlaufarthritis der Fingergelenke, Klin. Wchnschr. **3:** 224 (Feb. 5) 1924.

17. Kartal, Š: Die chronische Erysipeloidarthritis beim menschlichen Schweinerotlauf, Deutsche Ztschr. f. Chir. **244:** 332, 1935.

18. Gunther, G.: Schweinrotlauf beim Menschen, Wien. klin. Wchnschr. **35:** 1318, 1912.

19. Die Infektion eines Tierarztes mit tötlichem Ausgange, Tierarztl. Zentralbl. **26:** 141, 1903.

20. Prausnitz, C.: Bakteriologische Untersuche über Schweinrotlauf beim Menschen, Zentralbl. f. Bakt. (pt. 1) **85:** 362, 1921.

COMMENT

Points of interest in the case reported here are the probable source and portal of entry of the infection, the pathologic and bacteriologic observations, and any similarity of this disease to the chronic form of swine erysipelas infection with endocarditis seen in swine.

The occupational history of handling lobsters is most significant. While no specific mention of erysipeloid infection among lobster fishermen was found in the literature, Gilchrist [21] in 1903 reported 323 cases caused by crab bites or lesions produced by crabs. Klauder, Righter and Harkins [2] have reported 1,000 cases of erysipeloid in commercial fishermen of the Atlantic seaboard, and an epidemic of 200 cases in which the infection was acquired from cleaning fish has been reported from Odessa.[22] These reports of erysipeloid in kindred occupations indicate that the handling of lobsters likewise would be hazardous as regards this infection.

Fig. 4.—Swine's heart showing bulky vegetations on the mitral valve caused by Erysipelothrix rhusiopathiae. This specimen was lent for study by the Pathological Division of the Animal Industry Bureau of the United States Department of Agriculture in Washington, D. C.

The history sheds no light on a portal of entry for this infection. An expected story would have indicated a cutaneous abrasion followed by a localized infection, with or without constitutional symptoms and polyarthritis, preceding the symptoms of chronic heart disease. The only cutaneous lesion mentioned in the history seems to deserve no consideration as a portal of entry because it appeared one month after the onset of the disease. The arthritis mentioned likewise seems irrelevant, as it had been present for several years. However, the patient was not specifically questioned concerning lesions on the hands because the organism was not identified as Erysipelothrix rhusiopathiae until several weeks after death. For this reason it is felt that the probable portal of entry was a small erysipeloid lesion that was given little consideration by the patient and completely escaped the notice of his family.

Infection through the gastrointestinal tract is rarely reported in man and appears most unlikely in this

21. Gilchrist, T. C.: Erysipeloid, with a Record of 329 Cases of Which 323 Were Caused by Crab Bites or Lesions Produced by Crabs, J. Cutan. Dis. **22:** 507, 1904.

22. Stefansky, W. K., and Grünfeld, A. A.: Eine Epidemie des Erysipeloids in Odessa, Zentralbl. f. Bakt. (pt. 1) **117:** 376 (July 11) 1930.

case. The hospital course, typical of sepsis and endocarditis, needs no comment.

The endocarditis observed was not strikingly unusual. The mycotic aneurysm, the small abscesses in the myocardium adjacent to the aortic ring, and the bulky vegetations are characteristic of a moderately acute, combined ulcerative and vegetation-forming process. This is entirely compatible with the history of about three months of illness. The endocarditis as observed in swine usually involves the mitral valve, but the bicuspid aortic valve of this man was no doubt responsible for the localization of the endocarditis on that valve. The tendency of the vegetations in swine to invade the mural endocardium was not conspicuously remarkable in this case. A small area of endocardium was involved but to no greater extent than might have been expected from vegetations produced by a streptococcus.

The organisms recovered from the six antemortem blood cultures and from the heart's blood and the endocardial vegetation at necropsy were identical with the known strain of Erysipelothrix rhusiopathiae. In addition to our own results the organism from this case was likewise identified as Erysipelothrix rhusiopathiae by the Pathological Division of the Bureau of Animal Industry of the United States Department of Agriculture in Washington, D. C.

SUMMARY AND CONCLUSIONS

Three probable cases of endocarditis caused by Erysipelothrix rhusiopathiae have been collected from the literature. In two of these an expected and typical history of infection was obtained and endocarditis was observed at necropsy but bacteriologic confirmation was lacking. In the third case, with a clinical course suggestive of endocarditis and repeated blood cultures positive for Erysipelothrix rhusiopathiae, the endocarditis was not confirmed as a necropsy was not performed.

The case here reported is believed to be the first proved case of endocarditis caused by Erysipelothrix rhusiopathiae [23] with complete necropsy and bacteriologic studies. This disease is an instance of a chronic form of Erysipelothrix infection in man and a fatal complication of erysipeloid disease and is similar in all respects to the endocarditis complicating swine erysipelas. The apparent rarity of the disease, as suggested by the literature, with only three questionably identified cases is probably not entirely justified. While endocarditis in swine is an infrequent complication of swine erysipelas, it is observed and generally recognized by veterinarians. For this reason the opinion is ventured that more cases in man will be recognized in the future as the prevalence of erysipeloid infection is rapidly being publicized in the medical literature.

23. Credit is due Miss Marion Sweet, of the laboratory of the Children's Hospital, Boston, for first identifying this organism.

Blood Calcium.—Calcium occurs in the blood in two forms, ionized or combined with protein. The normal content is about 10 milligrams per cent. Considerable variations from that concentration may be dangerous. If blood calcium is lowered by taking it out of solution, twitchings and convulsive movements follow. They can be quickly relieved by injecting enough of a soluble calcium salt to restore the proper percentage. Removal of the parathyroid glands, four small structures near the thyroid gland in the neck, reduces the blood calcium to less than 7 milligrams per cent, without any change in the content of sodium or potassium. As the concentration approaches 5 milligrams per cent convulsions appear.—Cannon, Walter B.: The Wisdom of the Body, New York, W. W. Norton & Co., Inc., 1939.

PRIMARY SUPPURATION OF LIVER DUE TO FRIEDLAENDER'S BACILLUS

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The observation of liver abscess, single or multiple, in a hospital practice is of itself too frequent to warrant addition to the existing voluminous literature on this subject. Thorough studies of large series have been contributed by many authors, particularly when the infecting organism has been Endamoeba histolytica, staphylococcus, streptococcus, Bacillus coli, Bacillus pyocyaneus and many others. Numerous contributions concerning liver abscess are available in the literature, with the number of reported cases varying from ten to 186 (Ochsner and others,[1] Norris and Farley,[2] Martin,[3] Huard and Meyer,[4] Gessner,[5] Elsberg[6]). However, there are few cases on record in which Friedländer's bacillus has been isolated as the cause. Even though it has been recognized that infection with Friedländer's bacillus may involve regions of the body other than the respiratory system (Brouardel,[7] Bamforth,[8] Scheyer,[9] Howard,[10] Park, Williams and Krumwiede[11] and Alessandri[12]), a critical analysis of the American and foreign literature since the beginning of the century reveals not more than twenty-five cases of liver suppuration wherein this organism was accurately identified (Hegler and Nathan,[13] Le Sourd and Draillard,[14] Carnot, Dumont and Libert,[15] Eliason,[16] Gilbert-Dreyfus and Dausse,[17] Potier,[18] Courmont and Chalier[19]). Courmont and Dujol[20] isolated Friedländer's bacillus from a patient with suppurative chole-

Dr. Boettiger died Feb. 1, 1939.

1. Ochsner, Alton; DeBakey, Michael, and Murray, Samuel: Pyogenic Abscess of the Liver, Am. J. Surg. **40**: 292 (April) 1938.
2. Norris, G. W., and Farley, D. L.: Abscess of the Liver, M. Clin. North America **10**: 17 (July) 1926.
3. Martin, Walton: Spread of Bacteria from Gallbladder to Liver, Ann. Surg. **90**: 47 (July) 1929.
4. Huard, P., and Meyer, May J.: 150 observations d'abcès du foie, Mém. Acad. de chir. **62**: 169 (Feb. 12) 1936; 43 autopsies d'abcès du foie, Ann. d'anat. path. **13**: 885 (July) 1936.
5. Gessner, H. B.: Review of 96 Cases of Abscess of Liver, New Orleans M. & S. J. **85**: 793 (May) 1933; Abscess of Liver, Am. J. Surg. **20**: 683 (June) 1933.
6. Elsberg, C. A.: Solitary Abscess of the Liver, Ann. Surg. **44**: 217, 1906.
7. Brouardel, M.: Note sur les infections septicémiques à bacilles de Friedländer, Bull. Acad. de méd., Paris **96**: 240 (Nov. 16) 1926.
8. Bamforth, J.: Investigation of Bacilli of Capsulatus-Mucosus Group, J. Hyg. **27**: 343 (June) 1928.
9. Scheyer, H.: Der Bacillus Pneumoniae Friedländer als Erreger gynäkologischer Erkrankungen, Ztschr. f. Gynec. **1**: 3187, 1926.
10. Howard, S. E.: Bacteriological Findings in Epidemic Influenza, Bull. Johns Hopkins Hosp. **30**: 13, 1919.
11. Park, W. H.; Williams, A. W., and Krumwiede, Charles: Pathogenic Microörganisms, Philadelphia, Lea & Febiger, 1929.
12. Alessandri, Roberto: Surgery of the Liver, in Nelson Loose-Leaf Living Surgery, New York, Thomas Nelson & Sons, 1928.
13. Hegler, C., and Nathan, H.: Duday-und Friedländer-Bacillen-Sepsis, Klin. Wchnschr. **11**: 1900 (Nov. 12) 1932.
14. Le Sourd, L., and Draillard, R.: Méningite cérébrospinale et abcès du foie à pneumobacille de Friedlander, Gaz. d. hôp. **105**: 1185 (Aug. 10) 1932.
15. Carnot, P.; Dumont, J., and Libert, E.: Infection of Liver and Biliary Tract Caused by the Friedländer Bacillus, Paris méd. **1**: 479 (May 24) 1930.
16. Eliason, E. L.: Pylephlebitis and Liver Abscess Following Appendicitis, Surg., Gynec. & Obst. **42**: 217, 1906.
17. Gilbert-Dreyfus and Dausse, C.: Abcès du foie à pneumobacille de Friedländer, Rev. méd.-chir. d. mal. du foie **4**: 481, 1929.
18. Potier: Liver Abscess Due to Friedländer Bacillus, Bull. Soc. anat. de Paris, p. 500, 1892.
19. Courmont and Chalier: Abscess of the Liver Due to Friedländer's Bacillus, Lyon méd. **2**: 163, 1908.
20. Courmont, P., and Dujol, G.: Reproduction expérimentale d'abcès suraigu du foie, avec un pneumobacille de Friedlaender, d'une cholécystite humaine, Lyon méd. **119**: 938 and 973, 1912.

cystitis and liver abscess and by inoculation into a guinea pig produced a liver abscess. Baehr, Shwartzman and Greenspan [21] carefully studied 198 patients with Friedländer bacillus infection, and in only ten of the fourteen fatal cases were one or more liver abscesses revealed by operation or necropsy. Rothenberg and Linder [22] recorded twenty-four instances of single pyogenic liver abscess, but only two were due to Friedländer's bacillus.

Strangely enough, both of our patients had no evidence of a prior focus of entry at the time their infection was found localized in the liver. Such an onset is uncommon, since single or multiple pyogenic liver abscesses follow acute suppurative appendicitis, acute empyema of the gallbladder, chronic ulcerative colitis and other similar conditions.

PATHOLOGY

Bacteria carried to the liver do not necessarily proliferate but may be actually destroyed in the liver tissue. Chromatolysis and vacuolation of the liver cells with the formation of free pigment result.[23] Hepatic tissue is particularly resistant to infection. Not only does it possess strong antitoxic properties, but it also exerts a bactericidal action. This theory is supported by the frequency with which certain micro-organisms, for example the typhoid bacillus, are eliminated through

Fig. 1 (case 1).—Liver and diaphragm showing subdiaphragmatic pockets (*A*) and irregular hepatic abscesses (*B*).

the bile, rarely if ever causing a local infection. Micro-organisms will lodge in the liver and cause damage for one of two reasons: Either they encounter some anatomic or functional obstacle to free elimination, or the invading organisms, because of their number or their virulence, are permitted to flourish. In the two cases here reported there was no evidence of a focus of inflammation due to the Friedländer bacillus, unless

Fig. 2 (case 1).—*A*, diaphragm showing suppurative inflammation; diaphragmatic muscle; *B*, inflammatory cells.

one considers the history of bronchitis that preceded the onset of symptoms referable to the liver as indicating the existence of the origin of infection. At operation and at autopsy no inflammatory or calculous disease of the gallbladder was observed. Evidently there was no mechanical disturbance in the flow of bile. The liver suppuration probably resulted from the implantation there of a virulent strain of the organism, in one of the cases definitely by way of the portal vein. One must bear in mind the fact that this organism may be a normal inhabitant of both the respiratory and the intestinal tract.

The possible pathways to the liver are the portal veins, the hepatic artery, the bile ducts and the lymphatics. In gravely ill patients with bacteremia, the hepatic artery may be the port of entry, the abscesses then being small and multiple. When the bile ducts are the mode of distribution, the infection is an ascending one and the pattern corresponds to the architecture of the biliary duct system; small, bright yellow areas are visible, the color being due to the bile pigment. Lastly, the lymphatics may carry the infection, as in diffuse peritoneal involvements; but this route is rare.

If the infection travels by way of the portal veins, pylephlebitis with abscesses follows. Such abscesses are small and correspond in distribution to the portal venous branches. If septic emboli reach the liver, small abscesses form in large numbers. Surrounding

21. Baehr, George; Shwartzman, Gregory, and Greenspan, E. B.: Bacillus Friedländer Abdominal Infections Due to Suppurative Lesions of the Intestinal Tract, J. Mount Sinai Hosp. **4**: 225 (Nov.-Dec.) 1937.
22. Rothenberg, R. E., and Linder, William: Single Pyogenic Liver Abscess: Study of 24 Cases, Surg., Gynec. & Obst. **59**:31 (July) 1934.
23. Heyd, C. G.: Changes in the Liver Associated or Coincident with Infection of the Appendix, J. A. M. A. **83**: 1403 (Nov. 1) 1924.

the abscess focus are zones of intense congestion. Parenchymatous damage occurs in the liver cells, varying in degree from cloudy swelling, fatty degeneration and focal hepatic necrosis to a picture closely resembling acute yellow atrophy.[6]

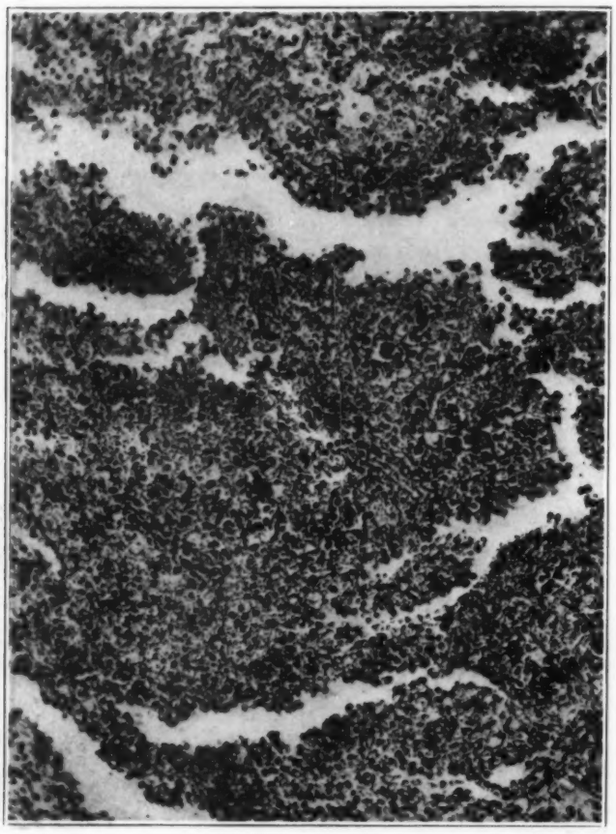

Fig. 3 (case 1).—Center of liver abscess showing massive necrosis of tissue with polymorphonuclear and mononuclear cellular infiltration.

Pyogenic abscesses may be found in any part of the liver, but the right lobe is more frequently and more extensively involved than the left. In addition, because of the large caliber of the right portal vein and its direct course, emboli lodge in this branch more frequently. Extensions of suppuration may travel from one lobe to the other, eventually resulting in great destruction, replacement, and compression atrophy of liver parenchyma. Subdiaphragmatic loculations usually result from the breaking of these abscesses through the thin shell of peripheral liver tissue.

SYMPTOMS AND SIGNS

Both of our patients were men in the fourth and fifth decades of life. For several weeks prior to hospitalization they had been troubled by a cough with expectoration. For this symptom medical treatment was sought. The expectoration was thick and consisted of tenacious mucopus, neither colored by blood nor of foul odor. The second patient had the typical bloody expectoration (so well described by Solomon [24]) only in the later stages, when consolidation must have been present.

In both of our patients episodes of chills, fever and sweats were outstanding and troublesome occurrences. The chills were sudden in onset and lasted for from several minutes to as much as one hour. Many were of such intensity as to cause the patient to shake the bed noticeably. The temperature often rose sharply from 100 to 106 F., suddenly receding. Following the hyperpyrexia, profuse sweating would set in and the patients were again comfortable. Between attacks they seemed so well that one hardly expected the recurrence of another episode of chills and fever within the next few hours.

As for gastrointestinal manifestations, the first patient never experienced abdominal pain. However, for the week prior to admission he vomited at irregular intervals. After the abdomen was palpated and the enormous tender hepatic enlargement detected, the absence of abdominal discomfort or pain seemed to be the more remarkable. Therefore one can readily understand why the second patient, with no hepatomegaly, also experienced no gastric disturbances whatever. However, jaundice set in at an early date and was progressive.

Blood cultures from the first patient yielded a pure growth of Friedländer's bacillus. In the second case the blood was sterile, even at the height of a marked febrile reaction. Blood smears from both patients showed a reduction in erythrocytes, an increase in total white cells (12,000 to 15,000 per cubic millimeter) and polymorphonuclear leukocytosis (80 to 90 per cent). The hemoglobin was greatly reduced by the severity of the illness.

Fig. 4 (case 1).—A view of interstitium and portions of hepatic lobules showing distortion of their architecture.

With our first patient, a diagnosis of liver suppuration was made prior to operation, and the detection of Friedländer's bacillus as the infecting organism was a distinct surprise. With this experience in mind, the examination of the second patient suggested to us the diagnosis of a primary infection of the liver, of Friedländer's bacillus origin. In substantiation of this

24. Solomon Saul: Primary Friedländer Pneumonia: Report of Thirty-Two Cases, J. A. M. A. **108**: 937 (March 20) 1937.

diagnosis were the previous history of cough, chills, hyperpyrexia and sweats, blood studies giving no evidence of malaria and amebiasis, and localization of the infection in the liver as evidenced by progressively increasing jaundice.

Fig. 5 (case 2).—Horizontal section of the liver illustrating the abscesses.

In both cases aspiration was attempted through the posterior extraperitoneal space, but this yielded no helpful data. When small abscesses are present, as in pylephlebitis and ascending biliary tract infections, one should not be disappointed by aspiration which yields negative results. The great enthusiasm of Wilmoth [25] for this diagnostic procedure was based on his experiences with amebic abscesses of huge size, as found in the tropics. Only if performed below the twelfth rib posteriorly in a direction forward and upward does aspiration afford little chance of contaminating a surgically clean pleural or peritoneal cavity. Barnard [26] reported a case in which transpleural aspiration of a perihepatic abscess was followed three hours later by the collapse and death of the patient. At autopsy 1½ pints (0.75 liter) of pus was found to have leaked into the pleural cavity, causing the patient's death.

Roentgenographic studies may be helpful in certain cases. In one of our cases we were able to visualize a high diaphragm and a displaced heart whenever the liver parenchyma filled with large collections of suppuration or when extensive subphrenic accumulations formed. Roentgenograms of the pulmonary field are of as little help as physical signs in detecting Friedländer's bacillus infection. However, after pulmonary consolidation has already formed, the affected areas may be located by this technic.

TREATMENT

Surgical intervention is indicated for two reasons: first, for the drainage of already formed hepatic abscesses; second, to avoid overlooking other localizations of pus such as subphrenic abscess and suppurative cholecystitis, even though, as in pylephlebitis, one is certain that hepatic abscesses of minimal size are present. If proper and careful exploratory aspiration has been previously done, as already outlined, and no pus has been encountered, one may conclude that a minimal quantity of pus is present, usually in the form of multiple small abscesses. If pus is located in an extreme anterior and superior portion of the liver, aspiration with the needle might not reveal it. Therefore if the surgeon always uses a posterior extraperitoneal operative approach, especially as recommended by Ochsner and Graves,[27] not only may he contribute nothing toward the establishment of an accurate diagnosis but his operative procedure may be totally ineffective for the relief of suppuration.

The patient is prepared for operation with blood transfusions and the intravenous administration of large quantities of dextrose. These measures are designed to replace water loss and replenish the glycogen reserve of an already depleted liver. A transperitoneal operative approach is made through a high rectus incision, and a careful exploration of all the abdominal viscera is carried out. A walled off perforation such as of a hollow intestinal viscus can thus be properly cared for (perforated peptic ulcers, acute suppurative appendicitis, diverticulitis of colon). Suppurative cholecystitis with cholangitis may be encountered independently of or in association with liver abscess, and for these surgical drainage is indicated.

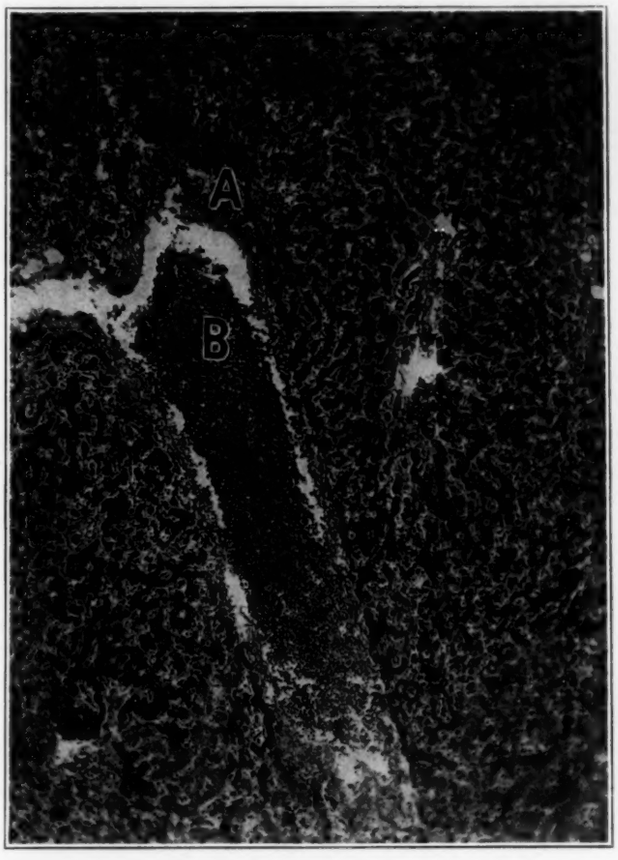

Fig. 6 (case 2).—Section through liver and large radicle of portal vein showing thrombus; *A*, vein wall; *B*, thrombus.

If hepatic abscesses of appreciable size are opened, an attempt should be made to create one large abscess cavity by connecting all loculations. Lastly, the subphrenic spaces should be explored for possible extensions of pus from the liver parenchyma.

25. Wilmoth, C. L.: The Use of Exploring Needles and Shadow-Casting Media in the Diagnosis of Hepatic and Perihepatic Abscess, Ann. Surg. **93**: 723 (March) 1931.
26. Barnard, H. L.: Surgical Aspect of Subphrenic Abscess, Brit. M. J. **1**: 371-429, 1908.
27. Ochsner, Alton, and Graves, A. M.: Subphrenic Abscess, Ann. Surg. **98**: 961 (Dec.) 1933.

In the second case reported, the Friedländer bacillus, although suspected, was never isolated until the operation. The miliary liver abscesses yielded a heavy growth of the organisms, the gallbladder content less and the peritoneal fluid the smallest number.

REPORT OF CASES

CASE 1.—*History.*—W. S., a man aged 54, born in Finland, married, a chauffeur, admitted to St. John's Long Island City Hospital Dec. 9, 1936, at 1 p. m., for several years had been troubled with constipation, indigestion, nausea after meals and frequent gaseous eructations. His chief complaints were chills, fever and occasional vomiting. There was a chronic productive cough of several years' standing. Prior to his admission his family physician treated him for "bronchitis" and for dyspnea on slight exertion.

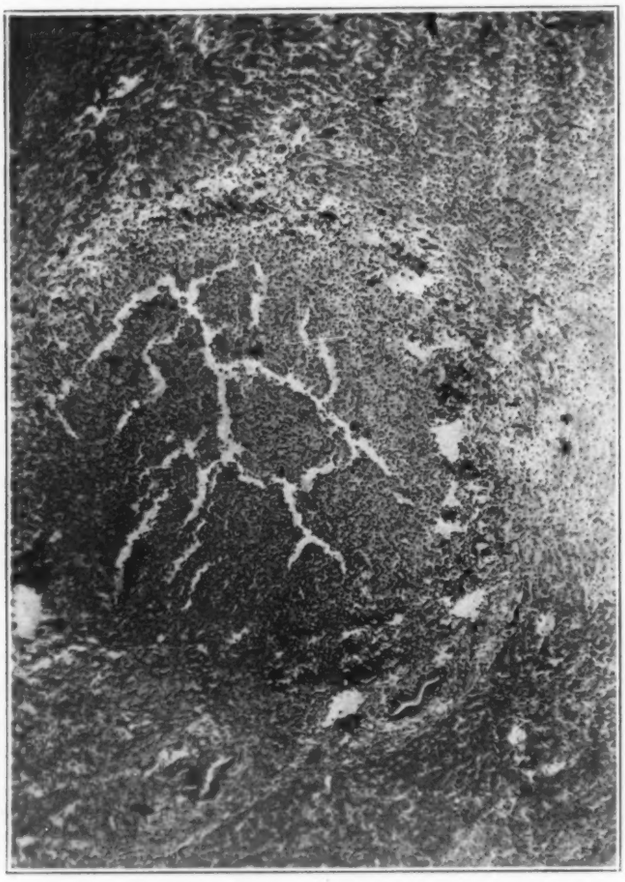

Fig. 7 (case 2).—Section of liver showing the abscess.

The onset of his present illness was seven weeks before, with a "sticking" pain in the region of the right shoulder, chills and fever. These attacks occurred almost two and three times a day and were followed by profuse and prolonged sweating. Abdominal pain was never experienced, but for the past week he had vomited at irregular intervals.

Physical examination revealed that the patient was dyspneic and orthopneic and acutely ill, with pulse rate 140 per minute, respiratory rate 40 per minute and blood pressure 88 mm. of mercury systolic and 52 mm. diastolic. The pulmonary fields showed fine and coarse rales only over the lower right part of the chest. Abdominal examination disclosed an enlarged and tender liver, the lower edge extending to a point midway between the umbilicus and the ensiform cartilage. The entire abdomen was moderately distended, and a gallbladder tumor was not felt. Urinalysis disclosed a faint trace of albumin with an occasional white blood cell and granular cast in a high power field. Sputum typing yielded positive results with type I serum (Neufeld reaction). Erythrocytes numbered 4,200,000, with hemoglobin content 87 per cent; leukocytes numbered 12,750, with 90 per cent polymorphonuclear leukocytes, 6 per cent lymphocytes, 3 per cent monocytes, and 1 per cent myelocytes. The laboratory reported no sign of Mycobacterium tuberculosis in the sputum smear or of malarial parasites in the blood smear and a negative Wassermann reaction of the blood. Culture of blood taken on the day of admission revealed gram-negative bacilli of the Friedländer group. The icterus index was 9.4. Exploratory aspiration of the liver and subphrenic space was attempted posteriorly, but no pus was obtained.

For the following two days the patient's condition remained unchanged; wide excursions of fever reaching 104 F. were preceded by a severe chill and followed by a profuse sweat. Roentgenographic studies as well as all other evidence pointed toward the presence of suppuration in the right upper region of the abdomen.

Operation.—This was done December 12. Anesthesia was induced with nitrous oxide and oxygen followed by open drop ether. The peritoneal cavity was opened through a right rectus incision beginning at the right costal margin and extending downward. The liver was markedly enlarged, with the lower margin just above the umbilicus. Through the smooth, glistening anterior surface of the right lobe an area of softening was palpated. The lateral half of the left lobe could likewise be indented by the palpating finger. However, the left lobe, in addition, contained small, yellow-brown areas 3 mm. in diameter on the anterior and inferior surfaces. At this point during the operation exploration of the rest of the peritoneal cavity was undertaken, revealing only a few pericecal adhesions to the lateral pelvic wall. Incision into the liver substance exposed an abscess from 8 to 9 cm. in diameter, situated in the supero-anterior portion of the right lobe. The pus was thick, yellow-green and without foul odor. A thin layer of liver tissue covered by peritoneum formed the roof of the abscess. The left lobe contained pus without a distinct cavity. Here the suppuration spread diffusely through narrow channels. Both liver lobes were widely opened and drained with gauze-filled Penrose drains. A stab wound for a rubber tube was made in the right lower quadrant.

Bacteriologic examination of pus from the liver demonstrated an encapsulated gram-positive bacillus identified culturally as belonging to the Friedländer group.

December 19, the seventh postoperative day, the temperature rose for the first time to 101.2 F. By the tenth postoperative day, December 21, it reached 104.2 F., with a corresponding increase in pulse and respiratory rate. However, the patient did not appear critically ill in spite of these marked rises in temperature and renewed attacks of chills, fever and sweats.

December 26 the wound was further explored with the patient under nitrous oxide anesthesia, and the pus cavities in the right and left lobes were drained more widely. However, following this second operation chest signs rapidly developed and the patient died Jan. 4, 1937.

Significant Pathologic Features.—The lungs showed lobar pneumonia involving the right upper and middle lobes and the left upper lobe, with bilateral fibrinous pleurisy. There were multiple abscesses of the kidneys and fibrous adhesions between the loops of small intestine. The liver weighed 2,875 Gm. No thrombophlebitis was found in the portal vein. There was an irregular abscess cavity involving the right lobe of the liver, and related to this but not directly connected with it were several subdiaphragmatic pockets of pus. A smaller abscess cavity was found in the left lobe. The causes of death were lobar pneumonia, liver abscesses and Friedländer bacillus septicemia.

CASE 2.—*History.*—L. S., a man aged 45, born in the United States, an insurance agent, admitted to the Boulevard Hospital March 18, 1938, complained chiefly of chills, fever, sweats and occasional abdominal pain. Both medical and surgical past histories were irrelevant.

Ten days prior to admission he woke up during the night with moderately severe generalized abdominal pain. The following morning he was seized with a chill followed by a high rise in temperature. The same evening the temperature was

normal and he felt much better. However, on the following day the temperature again rose, this time to 103 F. Ever since this time it had showed an intermittently septic course. Four days prior to admission he became progressively jaundiced, coughed and expectorated thick mucopurulent sputum, which was without a foul odor. This condition lasted only two or three days, at which time the cough and expectoration ceased. Careful examination of the sputum disclosed no pneumococci, but many gram-negative rods were in evidence on all occasions. This condition lasted for one week, when there occurred frequent chills, high fever and jaundice. The chills were so severe that some lasted as long as one hour with a rise in temperature up to 105 or 106 F. Strangely enough, at the termination of an attack of chills and fever the patient no longer appeared acutely ill.

On admission and immediately thereafter the temperature reached a height of 105.4 F. and receded to 99.8 F. The pulse rate was 120 per minute and the respiratory rate 40 per minute. On physical examination the patient seemed well nourished and not acutely ill. The skin and conjunctivas indicated an intense degree of jaundice. The lung fields were normal on physical examination as well as on x-ray study. The abdomen was greatly distended but revealed no areas of tenderness and no masses. Exploratory aspiration in the subdiaphragmatic and hepatic spaces posteriorly gave negative results. Urinalysis always revealed bile. March 19 the blood showed 3,590,000 erythrocytes, 14,350 leukocytes, 73 per cent hemoglobin, 80 per cent polymorphonuclears, 4 per cent monocytes, 14 per cent lymphocytes and 2 per cent myelocytes. By March 22 the leukocytes increased to 21,350, the hemoglobin dropped to 67 per cent and the polymorphonuclear leukocytes increased to 88.5 per cent. Smears for malarial parasites were negative, and repeated blood cultures were also negative.

Operation.—With use of subdural block anesthesia the peritoneal cavity was opened through a right rectus incision and a moderate amount of thin odorless yellow fluid was encountered. More than a pint was removed by suction. The entire liver surface, especially the right lobe, contained innumerable light yellow softened areas ranging from a few millimeters to 2 and 3 cm. in diameter. The larger involved areas were raised above the surface and soft to palpation. The picture was one of multiple liver abscesses. Aspiration of a large abscess with needle and syringe revealed liquefied necrotic material, culture of a specimen of which was taken. The gallbladder was incised and a large rubber tube was inserted for drainage. Along the portal system and bile ducts many enlarged lymph glands were palpated. No calculi were felt.

No difficulty was experienced in recovering Friedländer's bacillus from all three specimens, namely liver abscesses, gallbladder content and free abdominal fluid. Intensive treatment with sulfanilamide was given; blood samples showed 10.7 mg. per hundred cubic centimeters in the blood stream. However, the patient became progressively worse, jaundice deepened and the stools were clay colored. Chills, high fever and sweats continued, and he died April 6, the ninth postoperative day.

Significant Pathologic Features.—The lungs weighed 820 Gm. and showed bronchopneumonic consolidation involving the left lower lobe. The liver on section showed multiple abscesses, more numerous but smaller in the left than in the right lobe. The portal venous wall was thickened and adherent to its intima but not completely occlusive; friable thrombus was noted.

CONCLUSIONS

1. Liver abscess due to the Friedländer bacillus is a rare occurrence, especially when the involvement is primary in the liver itself.

2. The sites of entry may be the portal vein, the biliary tract system, the hepatic artery or the lymphatics.

3. Nearly all patients have chills, fever and sweats with a relatively small amount of abdominal distress.

4. The transperitoneal approach permits both thorough exploration and effective drainage.

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VISUALIZATION OF SPONTANEOUS INTERNAL FISTULA OF THE BILIARY TRACT

BY ROENTGEN RAYS

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The preoperative diagnosis of spontaneously occurring internal biliary fistula is a difficult one and intriguing to the inquisitive physician. Fistulas between some portion of the biliary tract and stomach or duodenum are rarely visualized roentgenographically, and relatively few such roentgenograms are found in the literature. We report here one extensive and one partial visualization of the bile tracts, showing not only retroflux of barium sulfate taken by mouth but also so-called air or gas shadows in the intrahepatic biliary tree.

Internal fistulas of the biliary tract are found in about 0.4 per cent of autopsies.[1] In 384 biliary fistulas

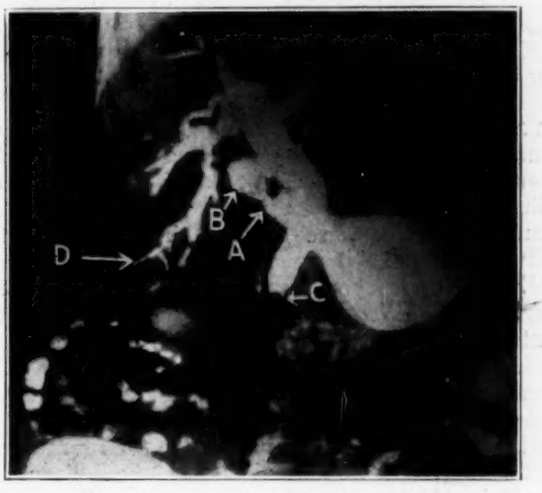

Fig. 1 (patient M. N.).—Appearance after a barium sulfate meal. The biliary passages are filled with barium sulfate, which has regurgitated through the fistula at *A* into what is probably a small gallbladder at *B*. The common duct is hugely dilated and shows a semicircular filling defect at *C*. Barium sulfate is seen in outlying liver ducts, as at *D*.

of all varieties collected by Naunyn,[2] 171 were internal (spontaneous): 108 into the duodenum, twelve into the stomach, forty-nine into the colon, one into the ileum and one into the jejunum. Judd and Burden [3] in 1925 reviewed 153 histories of patients with biliary fistula operated on at the Mayo Clinic and stated that for none of these was a preoperative diagnosis of fistula made. Graham, Cole, Copher and Moore [4] mentioned the infrequency of the clinical diagnosis but suggested that the barium sulfate meal will, on rare occasions, reveal a gastrointestinal biliary fistula. Soma Weiss [5] discussed the problem in an instructive manner at some length and presented the two excellent x-ray studies of Holzman-Abrams and Habbé-Smith. The

From the Women and Children's Hospital.

1. Roth, Schroeder and Schloth, cited by Judd and Burden.[3]
2. Naunyn, Bernard: On Cholelithiasis, translated by A. E. Garrod. London, New Sydenham Society, 1896, p. 143.
3. Judd, E. S., and Burden, V. G.: Ann. Surg. **81:** 305-312 (Jan.) 1925.
4. Graham, E. A.; Cole, W. H.; Copher, G. H., and Moore, Sherwood: Diseases of the Gallbladder, Philadelphia, Lea & Febiger, 1928.
5. Weiss, Soma: Diseases of Liver, Gallbladder and Pancreas, New York, Paul B. Hoeber, Inc., 1935, pp. 705-715.

textbooks and monographs on roentgenography of the biliary tract either do not mention (Barsony,[6] George and Leonard,[7] Schittenhelm,[8] Bertwistle[9]) biliary fistulas or merely refer to an occasional visualization by barium sulfate meal (Schinz, Baensch and Friedl,[10] Carman and Miller,[11] Barclay,[12] Henschen,[13] Albrecht,[14] Harrison[15]). Firor[16] in 1933 reviewed the roentgenologic literature and found recorded two hepatobronchial, one gastrobiliary, thirty-six duodenobiliary and four biliary-colonic spontaneous fistulas. Carman[11] in 1917 reported the first visualization of the biliary tract obtained by means of barium sulfate given orally to a patient with carcinoma at the pyloric end of the stomach. A spontaneous communication between duodenum and gallbladder had been established. Akerlund is usually mentioned as the first to call attention to the outlining of the biliary tract by air. His roentgenograms, however, were obtained by injection of air through external biliary fistulas of operative origin (1917). Busi[17] should probably be given credit for describing in 1919 the first x-ray visualization of a spontaneous internal fistula between gallbladder and duodenum by means of gas shadows and barium sulfate given orally. Erosion by gallstone had caused this fistula. As late as 1929 Friedrich[18] and Oehnell and Lindblom[19] believed themselves to be the first to report visualization, by "air" shadows, of the biliary tract. Berg[20] in 1937 presented an interesting discussion of spontaneously occurring "gas" shadows in the hepatic region.

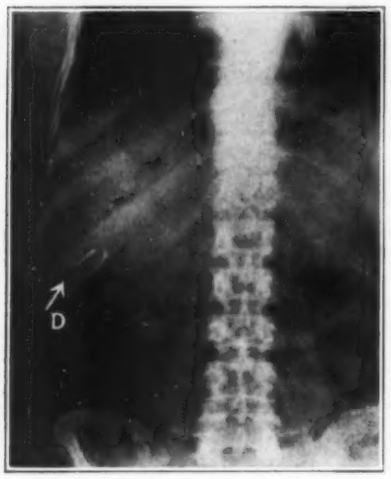

Fig. 2 (patient M. N.).—Appearance ten days after that shown in figure 1. Residues of the barium sulfate taken orally ten days earlier are seen at *D*. Higher in the midportion of the shadow of the right lobe of the liver are seen negative branching shadows of air in the dilated hepatic ducts.

One other method of outlining the intrahepatic biliary tract should be mentioned: use of gallbladder dye. When an external biliary fistula has been produced by inserting a T tube into the common duct at operation, the injection of iodized sesame oil (iodipin 40 per cent) into the tube outlines the tract in its entirety, and it is by this method that the most beautiful roentgenograms of the hepatic system have been obtained (Doubilet and Colp,[21] Walters, McGowen, Butsch and Knepper[22]). In the presence or absence of spontaneous internal biliary fistula, gallbladder dye given orally or intravenously rarely outlines the intrahepatic ducts, but it has been reported by Dienst.[23]

In the following case the history was more complicated by the persistence of gastric symptoms, without selective dyspepsia, than is usual in cases of bile tract disease:

M. N., a woman aged 55, with hypertension of twenty-nine years' duration and moderately severe diabetes known to be present four years, complained of attacks of epigastric pain with occasional jaundice present at intervals for thirty-two years. Gallstones had been diagnosed by a previous physician, and operation had been refused. For the past two years her attacks of epigastric pain, radiating to the right costal margin and under both shoulder blades, had been increasingly frequent. The patient entered the hospital in an especially severe attack characterized by right upper quadrant pain and muscle resistance, chill with high fever of the intermittent explosive sort, slight jaundice and bile in the urine, but without clay colored stools. She had vomited a considerable amount of "black" gastric content just before entrance but did not repeat this type of vomitus. In the days following, the notable feature of her complaint was its gastric character. Any food, but more markedly large meals, immediately brought on the pain in the epigastrium and "under the right ribs." This pain might assume a very sharp aspect but was of varying duration after eating, lasting from ten minutes to four hours. X-ray study with dye given orally produced nonvisualization of the gallbladder without calcifications in the gallbladder or liver regions. Barium sulfate given by mouth, however, after the first few swallows outlined the biliary system in its entirety and produced the unmistakable picture shown in figure 1.

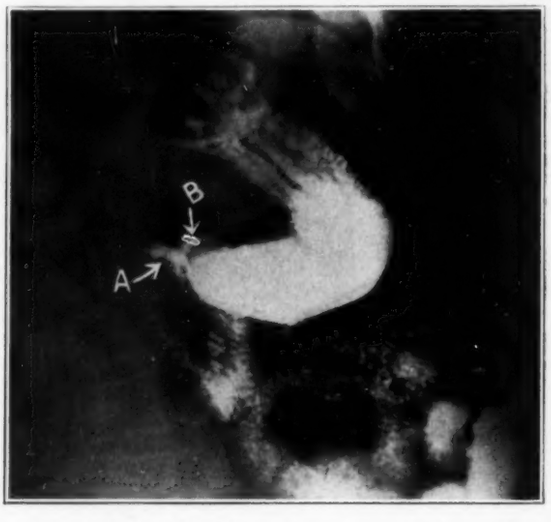

Fig. 3 (patient M. N.).—Appearance after a barium sulfate meal twelve months later than that shown in figure 1. Most of the fistulous tract is now obliterated and only the portion of it arising out of the pyloric antrum could be demonstrated at this time. *A*, residue of the fistulous tract; *B*, the flat duodenal bulb.

Our second patient, S. K., brought in the stone pictured in figure 4, which she had passed in the feces several months previously during a very severe attack of pain with prolonged fever and jaundice.

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22. Walters, Waltman; McGowen, J. M.; Butsch, W. L., and Knepper, P. A.: The Pathologic Physiology of the Common Bile Duct, J. A. M. A. **109**: 1591-1596 (Nov.) 1937.
23. Dienst, C.: Fortschr. a. d. Geb. d. Röntgenstrahlen **41**: 802, 1930.

Her roentgenograms (figures 5 and 6) are more difficult to interpret but equally significant. The latter type of picture, without the air shadows however, is the most common in the literature when spontaneous internal biliary fistula is found by barium retroflux. Such complete visualization as that of our first patient is rarely obtained [24] and probably depends on a number of factors. The size of the aperture into the adjacent organ, the shape of the fistulous tract, the dilatation of the biliary ducts and bile pressures in the liver must be involved. Carman believed that his technic of gastric and duodenal roentgenology with avoidance of overdistention accounted for his failure to visualize the fistulas reported by Judd and Burden. The amount of pressure needed to secure retroflux into the bile ducts, either through an internal fistula or through the sphincter of Oddi, seems to vary considerably. In our first case no pressure and in the second case ordinary palpation pressures were sufficient. In the absence of internal fistula Venables and Briggs [25] and other roentgenologists have secured filling of the ampulla of Vater alone, presumably by ordinary pressures, and think this significant of bile tract or pancreatic disease if duodenal diverticulum and the persistent fleck of perforated duodenal ulcer can be ruled out. Reimann [26] reported filling "through the normal sphincter Oddi." Henschen [13] stated the belief that barium may regurgitate into the gall ducts "through the open sphincter Oddi" owing to vomiting or gagging. Erna Lewin,[27] on the other hand, stated that there was no possibility of filling through a normal sphincter and cited the attempts of Beal and Jagoda on cadavers. These workers succeeded in filling the gallbladder and bile ducts from the duodenum, but only with so much pressure that the gallbladder burst. Wichtl [28] reported that contrast substance passing through Vater's papilla outlined the biliary tract in a patient with duodenal ulcer, verified by operation.

Fig. 4 (patient S. K.).—Gallstone passed by rectum during an especially severe attack of jaundice and pain four months before the roentgenograms shown in figures 5 and 6.

It is possible to say that in our first case the fistula was between the stomach and the bile tract. The roentgenogram (fig. 3) taken twelve months after figure 1 shows a residue of it originating from the antrum near the pylorus and crossing the flat first portion of the duodenum. The remainder of the fistula, shown so well in figure 1, had been obliterated in the interval, probably because of removal of obstruction at the papilla of Vater (dislodgment of stone?). Fistulas between the duodenum and bile tracts are fifteen times more common than between the stomach and the bile tracts (Judd and Burden,[3] Naunyn [2]). Since these fistulas are usually due to stone eroding through, it is also clear why the connection commonly occurs between the gallbladder itself and the duodenum, as seen in figure 5, rather than as in figure 1, which illustrates the rarer fistulas between the bile tract and the stomach.[11]

24. Brams, Julius: Radiological Exploration of Some Unusual Fistulous Tracts, Illinois M. J. **72**: 534-535 (Dec.) 1937.
25. Venables, J. F., and Briggs, P. J.: Visualization of Bile Ducts After an Opaque Meal, Guy's Hosp. Rep. **79**: 124 (Jan.) 1929.
26. Reimann: Fortschr. a. d. Geb. d. Röntgenstrahlen **41**: 802, 1930.
27. Lewin, Erna A.: Röntgenpraxis **4**: 222 (March) 1932.
28. Wichtl, Otto: Röntgenpraxis **9**: 559-562 (Aug.) 1937.

To one interested in the correct preoperative diagnosis of disease, the statement that "gastric symptoms sometimes predominate" is important. These patients as a rule have a prior history of long duration referable to the bile tract. An especially prolonged severe attack may then supervene, often with jaundice, sometimes as in our patient with vomiting of blood or bile with or without the passage of stone in gastric or fecal contents. The search for stone in the feces should not be omitted, as it is occasionally rewarded, even when the stones are small.[29] Perhaps more careful attention to these clinical points will insure an especially complete x-ray study including gallbladder and stomach and may visualize a suspected fistula, either by barium sulfate or by air shadows. Symptoms tend to recur in these cases of biliary fistula, for when a stone is passed the infected gallbladder with or without further stones

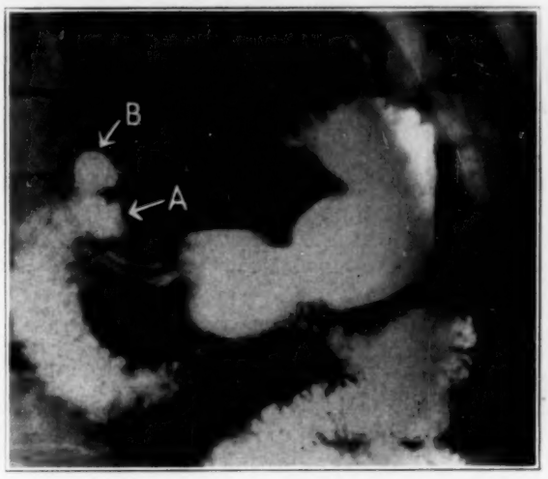

Fig. 5 (patient S. K.).—Appearance of duodenum after barium sulfate meal. *A*, the somewhat irregular cap; *B*, a cap-shaped mass of barium sulfate arising from the first portion of the duodenum, which is probably a fistulous tract into what is left of the gallbladder, from which the stone shown in figure 4 had passed four months earlier. (Figure 6 shows a later view). Diverticula arising from this point at the tip of the duodenal cap would be extremely rare.

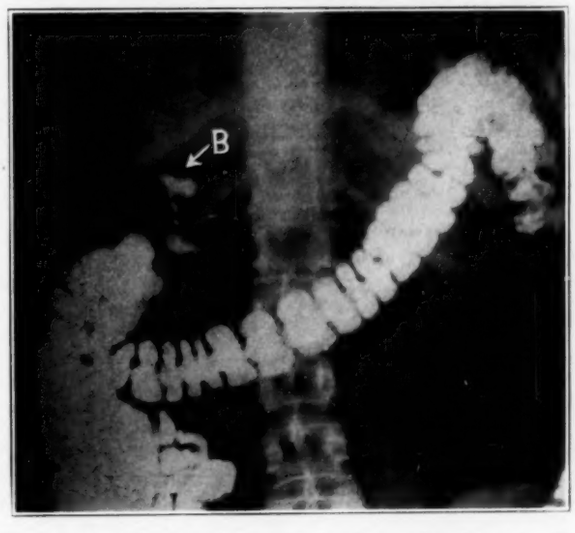

Fig. 6 (patient S. K.).—Appearance five hours after figure 5. *B*, the residue in what is probably the fundus of the gallbladder. Note the air shadow (negative) just above the barium sulfate. The fistulous tract is well shown, leading down toward the small residue in the duodenogastric region. The remainder of the barium sulfate has progressed well into the colon and fills it beyond the splenic flexure.

29. Ortmayer, Marie, and Austin, Margaret: Passage of Gallstones Through the Sphincter of Oddi, Am. J. Digest. Dis. **5**: 411-413 (Sept.) 1938.

remains behind. If the fistula closes because the flow of bile from the common duct is no longer impeded, the seriously infected gallbladder may suppurate. Very rarely the formation of an internal biliary fistula effects a permanent cure. Perhaps no better statement can be made than that of Judd and Burden: "The mortality and morbidity of surgical diseases of the biliary tract, other things being equal, is directly proportional to the duration of symptoms. Formation of a spontaneous internal biliary fistula is in no sense a cure of cholelithiasis but an additional dangerous complication." Although the mortality in these complicated cases is probably ten times as high as with less seriously diseased gall tracts, the clinician and the surgeon are usually forced to consider operation with closure of the fistula, cholecystectomy and careful exploration of the ducts for stone.

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THE USE OF VITAMIN B_6 IN PSEUDOHYPERTROPHIC MUSCULAR DYSTROPHY

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AND
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The finding of foci of muscle atrophy in vitamin B_6 deficient rats [1] and the production of tremors and convulsions in rats after the administration of massive doses of synthetic vitamin B_6 [2] indicated that vitamin B_6 might have some effect on muscle action. Accordingly it was decided to determine whether 2-methyl-3-hydroxy-4,5-dihydroxy methyl pyridine (vitamin B_6) had any effect on the muscular dystrophies of man. This communication deals with six cases of pseudohypertrophic muscular dystrophy which were treated with the synthetic vitamin.

REPORT OF CASES

CASE 1.—A boy was first seen in February 1938 at the age of 4. For one year prior to this time his mother noted that he was reluctant to walk, walked unsteadily requiring a wide base, fatigued easily on walking and had difficulty in rising from a supine position. In January 1939 he had to pull himself upstairs by sheer arm strength on the banister. At this time his calf muscles were becoming definitely larger. Aminoacetic acid and ephedrine therapy had no effect. During this period of observation the symptoms were slowly and progressively increasing. In October 1939 vitamin B_6 was administered subcutaneously in 10 mg. doses at intervals of from four to seven days. In three weeks he was able to walk up two stairs without the help of his hands, and his gait was normal. In one month he was able to walk up an entire flight of ten steps, one at a time, without the use of his hands when he started off with his right foot, and he could rise from a supine position with agility. When sterile injections of physiologic solution of sodium chloride were substituted for the vitamin B_6 there was a partial relapse after a week and a half. After reinstitution of vitamin B_6 therapy (from 100 to 250 mg. subcutaneously each week) improvement was again noted. At present (Jan. 4, 1940) his gait is entirely normal; he rises from the supine position as well as a normal child and runs with slight difficulty.

CASE 2.—A boy aged 11 years, a brother of patient 3, developed a lordosis and a waddling gait at the age of 6 years. He had received aminoacetic acid for eighteen months and prostigmine for four months without any effect. When he first came under our observation for vitamin B_6 therapy, Nov. 7, 1939, he could climb stairs by pulling on the banister with two hands or with one hand on the banister and one on his knee. He could rise only to his knees from a supine position. All his muscles were weaker in flexion than in extension. He was given a total of 680 mg. of vitamin B_6 subcutaneously during the course of one month, at intervals of from four to eight days. During this period the lordosis decreased, his walk improved, his grip was firmer and he rose from the supine to the erect position with agility. He was maintained on from 100 to 500 mg. of vitamin B_6 subcutaneously at weekly intervals. At present (Jan. 7, 1940) he rises from the floor more rapidly and with less effort, his walk is considerably improved, waddling is less pronounced and his grip is stronger. The patient complains less of fatigue on walking.

CASE 3.—The brother of patient 2, aged 13 years, who was markedly obese, weighing about 200 pounds (91 Kg.), had even more advanced impairment of muscular action. His appearance corresponded to that of the glandular type of pseudohypertrophic muscular dystrophy. At 5 years a wide gait, a tendency to limp and lordosis developed. He was barely able to walk. Aminoacetic acid for eighteen months and prostigmine for four months were administered without any effect. The muscles were large and doughy. He received the same vitamin B_6 treatment as his brother and in one month he was able to rise from a chair with only slight difficulty and walked more steadily. The improvement has been progressive and at the present time (Jan. 7, 1940) the strength in his arm is improved both in grip and in flexion power, he can rise from a chair with still greater ease and speed and his walk is more steady.

A third and younger brother, who has a mild form of muscular dystrophy, was given no treatment during this period and showed no improvement in his symptoms.

CASE 4.—A man aged 43 had for twenty years noted a weakness with gradually progressive inability to walk upstairs without pulling himself up by the handrail. At present the weakness also involves the trunk muscles and those of the upper extremities. Ephedrine and aminoacetic acid over a period of six months had no effect. On examination Dec. 16, 1939, the patient exhibited marked lordosis and a waddling gait. He was unable to raise either arm to the horizontal position without the assistance of the other. He could climb stairs only by pulling himself up with the aid of his hands and a wide, sloping posture. He could rise from the chair only when he had a stool on which to brace himself. Aminoacetic acid and ephedrine therapy were continued. Three hours after the subcutaneous administration of 50 mg. of vitamin B_6 he was better able to rise out of a chair. He noted greater ability in performances, especially in climbing inclines, in rising and in dressing himself. Five days later he could raise his arms 15 degrees in the horizontal plane without assistance and, in addition, was now able to hold this position. He stood more erect and rose out of a chair with less assistance of his hands. The following week 150 mg. of vitamin B_6 was given subcutaneously and in six days the patient discarded his cane, since he could get along without its aid. He could now raise his arms much higher, almost touching the midhumeral level of one arm with the fingers of the other. He could also button his collar without effort. Three hundred mg. of vitamin B_6 was given subcutaneously at this time and about a week later he could touch his shoulder with the fingers of the other arm. His posture was less lordotic, he could walk with even greater agility, dress himself with minimal trouble and rise from the chair with very little help.

CASE 5.—A boy aged 16 had progressive weakness of the muscles of the shoulder girdle, which had been noted for five years. On his first visit the patient wore an elaborate brace to keep his shoulders from drooping and to aid him in elevating his arms. He could elevate his arms through about 75 degrees before it was necessary for him to use the accessory muscles of the neck for further elevation. Within a half hour after the administration of 50 mg. of vitamin B_6 intravenously he could elevate his arms through twice the distance and required much less use of the accessory muscles to elevate the arms completely. He was given 100 mg. of vitamin B_6 for two more doses at weekly intervals, at which time the improvement was so pronounced that the patient discarded his brace because he

From the Division of Laboratories, the Newark Beth Israel Hospital.
1. Antopol, William, and Unna, K., to be published.
2. Unna, K., and Antopol, William: Proc. Soc. Exper. Biol. & Med., to be published.

could now elevate his arms to the perpendicular position with minimal accessory use of his neck muscles. The patient returned to school and no further treatment has been administered. Two weeks after the last administration of treatment he writes that he has never felt better and sees no need for the use of a brace.

CASE 6.—A girl aged 8½ years developed a peculiar walk with lordosis and some waddling after an attack of whooping cough at the age of 2 years. About six years later she began to have trouble walking upstairs. At first it was necessary to pull herself up by the banister, and for the last year it was necessary for her to use her hands and her knees in order to push herself up the steps, and this was accomplished only with very great effort. At this time it was also noted that she had considerable trouble in rising from the supine position. In the past six months she had not been able to get up to the erect position. One hundred mg. of vitamin B_6 was given at weekly intervals for two weeks, after which time the child could rise from the supine position to a fully erect one with moderate difficulty only. A week after the administration of another 100 mg. of vitamin B_6 she could walk downstairs with alternate feet for the first time in over a year. The hand grip by this time was improved. Since that time, despite intensive therapy, not only has she failed to improve, but her condition has become worse.

COMMENT

Since vitamin B_6 is a newly synthesized compound, its pharmacologic action has not been sufficiently investigated, and its effects can be accounted for only theoretically. It is known that pyridine in its action resembles coniine and piperidine, except that pyridine does not cause paralysis of the ganglion. It might be assumed that vitamin B_6, which is a pyridine derivative, has an enhanced pyridine stimulating effect. In support of this contention it has been found that large doses of vitamin B_6 produce muscular spasms and convulsions in rats.[2] Spies and his co-workers [3] also noted increased muscle strength in patients with vitamin deficiency after the administration of vitamin B_6. It must also be considered that this compound may aid in the production of the respiratory enzyme containing the pyridine structure which is involved in muscle metabolism. His [4] made the interesting observation that pyridine injected into dogs is converted to its methyl derivative. It is not to be implied that this group of muscular dystrophies are due to avitaminosis B_6.

No untoward effects were observed in any of the patients receiving the compound. The effect of this compound on the adrenal cortex is under investigation, since it produces changes in this organ.[5] Aside from the hypodermic route, inunction and oral administration are being tried. The effects of vitamin B_6 on myasthenia gravis and other forms of muscular derangement and weakness are under investigation.

In view of the promising results with the cases of pseudohypertrophic muscular dystrophy, though the patients have not been cured and are still under treatment, this form of therapy is being studied further and is also being investigated in conjunction with other vitamins, particularly E and riboflavin, and with aminoacetic acid and ephedrine.

SUMMARY

1. Vitamin B_6 was used in six cases of pseudohypertrophic muscular dystrophy with considerable improvement in their condition.

2. No untoward symptoms were observed in any of the cases.

201 Lyons Avenue.

3. Spies, T. D.; Bean, W. B., and Ashe, W. F.: Note on Use of Vitamin B_6 in Human Nutrition, J. A. M. A. **112**: 2414 (June 10) 1939.
4. His, W.: Arch. f. Exper. Path. u. Pharmakol. **22**: 253, 1887.
5. Unna and Antopol (footnotes 1 and 2).

HISTAMINASE IN THE TREATMENT OF COLD ALLERGY

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CHARLOTTE, N. C.

For several years Horton, Brown and Roth [1] have studied the interesting phenomena exhibited by patients suffering from cold allergy or a hypersusceptibility to cold. They have demonstrated that the systemic reactions, behavior of the blood pressure, pulse rate and gastric acids of these patients when exposed to cold are in every way comparable to the symptoms experienced by persons who have received injections of histamine hydrochloride. Similar local reactions in the hand may be reproduced by the intra-arterial injection of 0.5 mg. of histamine. These workers have concluded that physical agents such as cold probably cause increased permeability of the tissue cells and permit the release of histamine, which is a normal constituent of the skin and other organs, thereby causing the phenomena manifested by patients exhibiting hypersensitivity to cold. Since the work of Dale [2] on the chemical transmission of nerve impulses by acetylcholine, it was suggested that the liberation of acetylcholine might be responsible for the phenomena shown by patients with cold allergy. This suggestion has now been disproved.

In 1931 Best and McHenry [3] demonstrated that histamine was destroyed in the body by an enzyme called histaminase. This enzyme was found to be present in relatively large amounts in the wall of the large and small intestine and in moderate amounts in many other organs.

Histaminase is now prepared commercially.[4] According to the manufacturers it is a protein-like material derived from the intestinal mucosa and is said to be destructive to histamine and histamine-like substances. It is prepared in enteric coated tablets, each representing five histamine detoxicating units, or in ampules, each dose being equivalent to two histamine detoxicating units. One unit represents the quantity of histaminase which is capable of detoxifying 1 mg. of histamine hydrochloride during twenty-four hours at 37 C. It was therefore logical that histaminase should be tried in cases of cold allergy, which in all probability is caused by its antagonist, histamine.

The first case of cold allergy successfully treated with histaminase was reported by Roth and Horton [1] in 1937. It was my privilege to be associated with these workers, and naturally I have been on the alert for similar cases. Hypersensitiveness to cold is supposed to be an extremely rare condition, and most of the reported cases have involved patients from the Northern and Northwestern states; however, during the past

1. The work has been described in the following articles:
Horton, B. T.: Cold Allergy, Proc. Staff Meet., Mayo Clin. **2**: 276-277 (Nov. 23) 1927.
Horton, B. T., and Brown, G. E.: Histamine-like Effects on Gastric Acidity Due to Cold, ibid. **7**: 367-371 (June) 1932.
Horton, B. T.; Brown, G. E., and Roth, Grace: Hypersensitiveness to Cold with Local and Systemic Manifestations of a Histamine-like Character: Its Amenability to Treatment, J. A. M. A. **107**: 1263-1269 (Oct 17) 1936.
Horton, B. T., and Roth, Grace: Collapse While Swimming: The Most Dangerous Consequence of Hypersensitiveness to Cold, Proc. Staff Meet., Mayo Clin. **12**: 7-11 (Jan. 6) 1937.
Roth, Grace, and Horton, B. T.: Hypersensitiveness to Cold: Treatment with Histamine and Histaminase; Report of Case, ibid. **12**: 129-134 (March 3) 1937.
2. Dale, Henry: Chemical Transmission of the Effects of Nerve Impulses, Brit. M. J. **1**: 835-841 (May 12) 1934.
3. Best, C. H., and McHenry, E. W.: Histamine, Physiol. Rev. **11**: 371-477 (Oct.) 1931.
4. The supply of histaminase, called T: 360, or Torantil, was furnished by the Winthrop Chemical Company, Inc.

year of private practice I have observed two definite cases of cold allergy. It is my belief that the condition will be found not such a rarity as it seems, once the index of diagnostic suspicion is increased, and that it is not necessarily indigenous to the colder climates. Both of these patients were successfully treated with histaminase.

REPORT OF CASES

CASE 1.—*History.*—A married woman aged 68, first seen in September 1938, had usually enjoyed excellent health prior to February of that year. There had been no serious medical or surgical illnesses. She was not aware of the presence of hypertension until this examination.

In February, while kneading dough with cold milk, her fingers and hands became painful and swollen so that the hands could not be closed. The fingers were blanched, while the hands were livid red. The pain and color changes disappeared after ten minutes but the swelling persisted for six hours. Since the first experience, the immersion of the hands in cold water or exposure to cold had produced similar reactions. A severe generalized headache, palpitation and general tremulousness often accompanied the reactions but usually subsided with the onset of localized edema.

The hands were not alone susceptible. Areas of erythema and edema would develop in other parts of the body when exposed to cold. Cold air would produce numbness and tingling of the face with occasional swelling of the lips and eyelids so that the patient used a protective wrap around her face even in the summer. Cold drinks would precipitate an irritative cough and edema of the lips and tongue so that speech was difficult. These reactions would occur on the warmest days of summer. She was very careful never to remove her dental plates from cold water because of the swelling of the gums when the teeth were placed in her mouth. For months she had taken olive oil baths and it was necessary to heat the bedclothes before retiring to prevent pruritus and generalized paresthesias. The sensation of cold was never appreciated as cold but as a burning paresthesia. Other symptoms of her sensitivity to cold have occurred but are too space consuming to detail here.

There had been no hemoglobinuria with any of the attacks, a phenomenon not infrequently observed when these patients are subjected to severe cold. There was no history of pollen

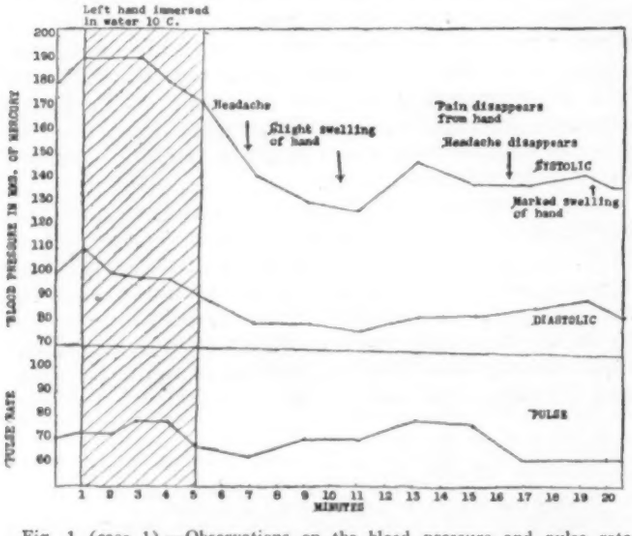

Fig. 1 (case 1).—Observations on the blood pressure and pulse rate when the left hand was immersed in water at 10 C. for five minutes. The appearance of certain symptoms after cessation of the test is correlated with these observations. The patient has mild essential hypertension.

sensitivities, food and drug idiosyncrasies or other allergic manifestations. An inventory of symptoms by systems did not reveal any additional significant facts. The family history, marital history and past medical history were irrelevant.

Physical Examination.—The patient was remarkably active and alert for her years. She weighed 120 pounds (54.5 Kg.). The pulse and temperature were normal. The blood pressure was 182 mm. of mercury systolic, 90 diastolic. There was an immature cataract in the right eye, preventing a satisfactory ophthalmoscopic examination. The fundus of the left eye was normal save for a moderate degree of sclerosis of the retinal arteries. The heart was apparently normal except for an occasional ventricular premature contraction. The lungs were clear. The abdomen and pelvis were essentially normal except

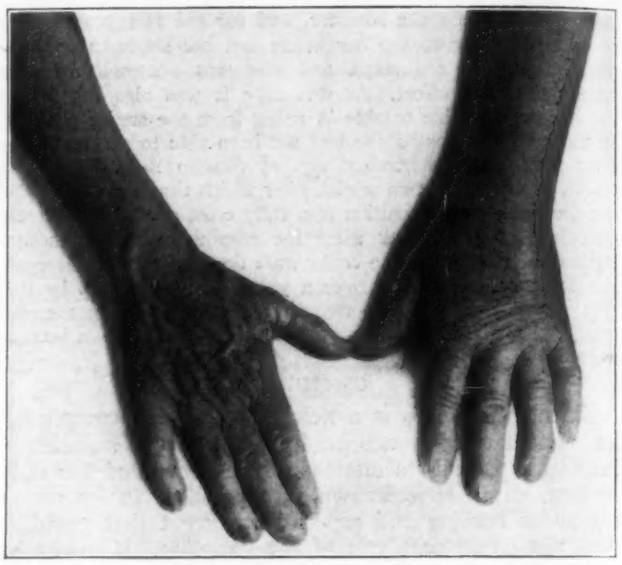

Fig. 2 (case 1).—Appearance of left hand after it had been immersed in water at 10 C. for five minutes. The hand was less swollen and color changes less marked than on previous occasions.

for retroversion of the uterus. The presence of Heberden's nodes and deformities of the digits gave evidence of senescent arthritis. There was moderate sclerosis of the peripheral arteries. All the peripheral pulsations were present. The reflexes were normal. There were no cutaneous lesions.

The Kline and Wassermann serologic reactions of the blood were negative. The hemoglobin determination was 71 per cent by the Sahli method. The red blood cells numbered 4,680,000 and the white blood cells 6,450 per cubic millimeter, with a normal differential count. There was no morphologic abnormality of the erythrocytes.

It was evident that the patient was probably suffering from a hypersensitiveness to cold. This was soon confirmed by a simple procedure. Cold water was poured over both hands and the distal half of the forearms. Within two minutes the hands and the forearms became livid red, the changes being sharply confined to the areas which were in contact with the cold water. The fingers, however, were extremely blanched and presented a sharp contrast to the purplish red of the hands. There was no diminution in the pulsation of the radial arteries. The involved parts became very painful. The pulse rate was accelerated and the patient complained of a generalized headache. After about ten minutes the headache, tachycardia and color changes subsided but coincidentally with this the swelling of the hands became so marked that she could not close her hands. The swelling involved only the parts which were placed in the cold water and ended abruptly at the line of immersion. There was also some slight swelling and itching of the lips. The edema gradually subsided within the next twenty-four hours. This procedure was repeated for the benefit of other observers but each time the results were less dramatic.

Seven days later, more detailed studies of the pulse rate, blood pressure and gastric acids were made. The standard test for sensitivity to cold described by Horton and Roth [1] was employed. Briefly, it is described by these authors as follows: "The hand is immersed in ice water at 10 C. (50 F.). Prior to immersion of the hand into ice water, observations as to pulse rate and blood pressure are made and observations are made at intervals while the hand is in the water and for a period of twenty minutes after the hand is removed from the

water. If swelling of the hand occurs after it has been removed from the water, the indication is that the patient is sensitive to cold. This test should not be confused with the 'cold test' for essential hypertension."

The observations on the case herein reported are summarized in figure 1. The most significant drop in blood pressure occurred shortly after the hand was removed from the cold water. This was confirmed by a repetition of the test. The time of appearance and cessation of certain clinical symptoms and signs are also noted in figure 1. The localized edema of the hands (figs. 2 and 3) persisted for about eighteen hours after this test.

An attempt was made to repeat the studies made on the gastric acids by Horton and Brown.[1] They found a striking similarity between the acidity curves produced by the tests just described and those produced with histamine stimulation. A stomach tube was introduced prior to the cold water test. No free hydrochloric acid was present; however, after the test another gastric specimen was examined and this revealed 8 units of free hydrochloric acid. Unfortunately the gastric analysis could not be repeated after histamine stimulation.

Treatment.—Two methods of treatment were employed: (1) gradual desensitization to cold and (2) histaminase therapy. The course of treatment required five weeks. During the first week the hands were immersed in ice water, 10 C., twice daily for one minute; during the second week the time of immersion was increased to two minutes twice daily and so on until the fifth week, when the hands were immersed for five minutes twice daily. The patient was instructed not to increase the time of immersion if severe reactions occurred. Fortunately this was not necessary and the program as outlined was followed successfully. The water temperature was regulated by a bath thermometer.

Histaminase tablets were used simultaneously. Each tablet contained five histamine hydrochloride detoxifying units. Two tablets were given orally for the first two days and thereafter three tablets were administered daily, so that 103 tablets, or 515 units, were used during the five weeks of therapy. No subjective or objective signs of toxicity to the drug were observed.

Fig. 3 (case 1).—Front view of hands shown in figure 2.

The results of the treatment were most gratifying. It became possible for the patient to do her laundry and to use cold water indiscriminately with no reactions resulting. However, following bronchopneumonia in January 1939 a slight swelling of the hands returned with exposure to cold. She was again given one tablet of histaminase daily for twenty days. There has been no return of her symptoms. Recent correspondence, nine months later, states that the patient is enjoying excellent health and no longer fears exposure to cold.

The second case was similar in many respects and is therefore not reported in detail.

CASE 2.—A married woman aged 26 had usually enjoyed excellent health. In the summer of 1932 during the very hot weather she allowed water from melting ice to drop on her face for several minutes. Within a few minutes she noticed edema of the face accompanied by a stinging sensation. Shortly after the initial incident she observed swelling and pallor of the hands when she held a glass containing a cold beverage. At times merely placing her hands in the refrigerator to remove food would cause an urticarial reaction of the hands. The following winter, exposure to cold for brief periods would cause swelling, reddening and pruritus of the face and neck. Prolonged exposure would cause edema and a mottled appearance of the lower extremities. She avoided cold baths and swimming because they always produced a "checker-board mottled appearance of the skin." These symptoms had persisted for seven years before treatment was begun. No hemoglobinuria had been noted.

The physical examination showed essentially normal results throughout. Treatment was instituted in the same manner as that employed in the first case except that only two tablets of histaminase were taken daily. A total of about 300 units of histaminase was given to this patient over a period of thirty days.

Again rather dramatic results were obtained. It is now possible for her to handle ice and disregard cold without untoward results. During a recent vacation, ocean bathing was enjoyed with no discomfort.

COMMENT

Three methods for the treatment of cases of hypersensitivity to cold have been previously recommended: (1) subcutaneous injections of 0.1 mg. of histamine twice daily for two to three weeks, (2) systemic desensitization to cold as described in this report and (3) the oral use of histaminase. The latter two methods appeared more practicable for several reasons and were therefore jointly employed in the two cases here reported. In the first case, histaminase was successful when used alone in treating a mild relapse even though it was given in small doses. I have had no clinical experience with the intramuscular use of histaminase. It would be interesting to know what ameliorating effects a single injection might have on the acute manifestations of cold allergy, whether naturally or experimentally induced.

Histaminase is now being employed in the treatment of several conditions of an allergic nature. Foshay and Hagebusch[5] have reported excellent results from the use of histaminase in serum sickness. Roth and Rynearson[6] have recently reported interesting observations of its use in the treatment of allergic reactions to insulin. I propose to make a clinical trial of histaminase in the treatment of migraine. A wider application of this drug is suggested, particularly in allergic diseases and especially in those conditions in which urticaria is a prominent feature.

SUMMARY

Two patients with cold allergy, or hypersensitiveness to cold, were successfully treated by the combined use of histaminase and a method of systemic desensitization to cold. The use of histaminase for allied conditions is suggested.

119 West Seventh Street.

5. Foshay, Lee, and Hagebusch, O. E.: Histaminase in Serum Sickness, J. A. M. A. **112**: 2398-2402 (June 10) 1939.
6. Roth, Grace M., and Rynearson, E. H.: The Use of Histamine and Histaminase in the Treatment of Allergic Reactions to Insulin, Proc. Staff Meet., Mayo Clin. **14**: 353-358 (June 7) 1939.

CONCENTRATED HUMAN BLOOD SERUM AS A DIURETIC IN NEPHROSIS

FURTHER OBSERVATIONS

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In July 1938 Aldrich, Stokes, Killingsworth and McGuinness reported the results from treatment of nine patients with pure lipoid nephrosis by intravenous injection of concentrated pooled human serum. In this paper it was shown that, while some of the responses were spectacular and apparently curative, others were disappointing.

It is our purpose in this paper to record further experiences with seven additional patients and to tabulate the results not only for these patients but also for the previously recorded nine. In this way it is hoped that some more definite indications for using this method may be found.

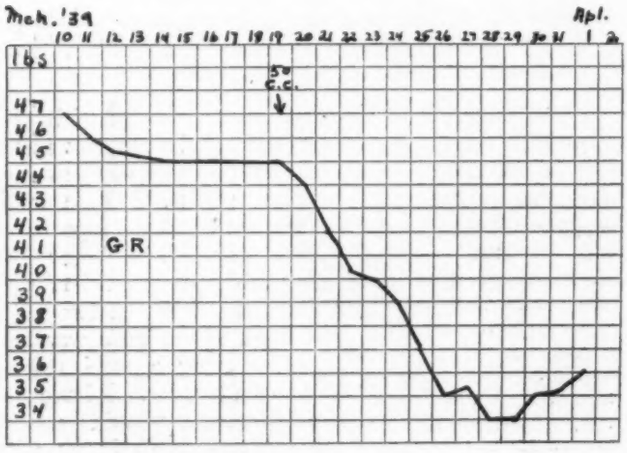


Chart 1 (case 1).—Complete diuresis following intravenous injection of 50 cc. of four times concentrated serum. Complete recovery ensued.

We are including all the patients with pure nephrosis whom we have seen during the intervening period and in addition are tabulating two additional case reports furnished by Dr. Joseph Stokes Jr., of Philadelphia. Treatment with the serum was instituted as soon as feasible in every case. An initial dose of from 25 to 65 cc. of the four times concentrated serum was administered intravenously, and if diuresis did not follow within two or three days another injection was made. The maximum number of treatments necessary in any one attack of edema was four, and in most instances one or two were sufficient. In one instance, as a matter of experiment (case 6), several smaller injections (10 cc.) were made on several succeeding days. This method, however, did not appear successful and has not been repeated.

In addition to the present study, serum was given to many patients with other types of renal edema, but the results were disappointing. In fact, so regular has been the favorable response with nephrotic patients, and so infrequent the diuresis in other types of renal edema, that we have come to look on the response to serum as a fairly accurate method of differentiation. Whenever an appreciable number of red blood cells were demonstrable in the urine, diuresis did not follow.

Read before the American Pediatric Society, April 29, 1939.

PREPARATION OF SERUM

In the cases reported in 1938 the serum used was furnished by the Philadelphia Serum Center, and that material was used in cases 1 and 2 of this series. The other patients were given serum prepared in Chicago in the following manner: Blood was drawn from voluntary donors in the outpatient department of the Children's Memorial Hospital.[1] This was then turned over to the Samuel Deutsch Serum Center for separation of serum and pooling, after which it was sent to Northwestern University Medical School for dehydration, approximately as done by Flosdorf and Mudd. After this process it was again sent to the Serum Center for sterility tests before use. (It should be mentioned that whereas in the last year's group filtering after dehydrating to remove large fat globules was considered necessary, further experience has demonstrated that this precautionary measure can be safely eliminated.) The serum finally produced comes to us as a reddish yellow powder in tubes with a rubber stopper. Each tube is marked with the number of cubic centimeters of original serum from which it was obtained. In diluting this for injection, it is necessary merely to thrust a needle through the stopper and introduce one fourth the original liquid measure of sterile water. If desired, homologous serum can be used to obtain a five times concentration. Drs. S. A. Levinson, C. J. Farmer, W. P. Killingsworth, L. L. Braun and other assistants cooperated in preparing this material for experimental work without compensation.

REPORT OF CASES

In the following case reports we shall, for the sake of brevity, eliminate notations as to albuminuria, blood in the urine, blood chemical estimations, blood pressure and edema. All the patients had (1) marked generalized edema, (2) large amounts of albumin persistently in the urine and (3) no red cells in any of the urinary sediment examined. (Enough red cells to cause a positive benzidine test on the centrifuged sediment ruled out the diagnosis of nephrosis.) All had normal blood pressure, normal nonprotein nitrogen and blood urea nitrogen estimations, increased blood cholesterol and marked decrease in the serum proteins with a reversal of the albumin-globulin ratio.

CASE 1.—G. R.,[2] a boy aged 4 years, was admitted to the Abington Memorial Hospital March 10, 1939. March 7 both legs and ankles became swollen. The next day the abdomen, scrotum and penis increased in size. The face did not change, but the patient had a poor appetite and was weak. The physical examination revealed nothing unusual but generalized edema. The face became more edematous in a few days, and the apathy increased.

March 19 he was given 50 cc. of four times concentrated serum intravenously, following which there was a sharp febrile reaction, the temperature rising to 106 F. This reaction subsided by the next morning, at which time diuresis set in. The boy lost 11 pounds (5 Kg.) and all of his edema in nine days. The albumin was reduced to a mere trace by April 1 and on May 1 was reported to be negative.

Case 1 illustrates complete diuresis with one dose of 50 cc., followed by complete recovery.

1. It is worthy of more than passing notice that no difficulty was encountered in getting the parents and relatives of our ward patients to donate blood as a mark of appreciation for the care their children were receiving.

2. Case report furnished by Dr. Joseph Stokes Jr., Philadelphia.

CASE 2.—S. C.,[2] a Negro boy aged 3 years and 2 months, was admitted to the Children's Hospital of Philadelphia Jan. 3, 1938. Three days previously his eyelids were swollen on awakening.

On admission there were marked generalized edema, a temperature of 100.6 F. which immediately fell to normal, and no other abnormality.

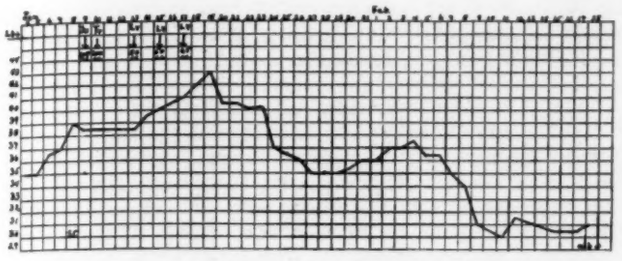


Chart 2 (case 2).—Complete diuresis following three injections of 50, 50 and 25 cc. of four times concentrated serum. Complete recovery took place.

January 9 he was given 105 cc. of a 50 per cent sucrose solution intravenously. January 10 100 cc. of citrated blood was administered. There was no loss of weight. He was then given three injections of four times concentrated serum; 50 cc. January 13, 50 cc. January 15 and 25 cc. January 17. Two days later a prolonged diuresis of three weeks began, in which he lost 13 pounds (6 Kg.) and became edema free. The albumin then disappeared from the urine, and he is at the present time entirely well.

Case 2 illustrates complete diuresis after concentrated serum therapy, with prompt recovery from all signs of nephrosis.

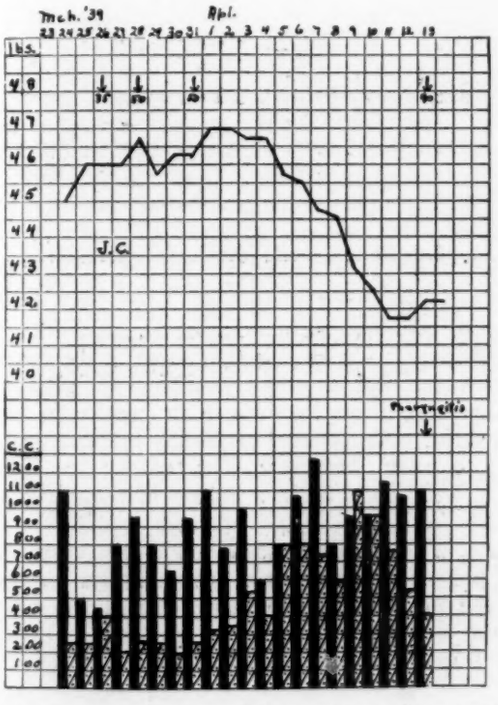


Chart 3 (case 4).—Incomplete diuresis following three injections of 35, 50 and 50 cc. of four times concentrated serum. The interruption was due to lessened urinary output with the onset of pharyngitis. The patient eventually succumbed.

CASE 3.—J. R., a girl aged 3 years, was admitted to the Children's Memorial Hospital Nov. 9, 1937, with a history of generalized swelling for the last four months.

After a period of observation during which she gained 3 pounds (1.3 Kg.), she was treated with 30 cc. of four times concentrated serum November 22 and with 40 cc. November 30. With the first injection there was a sharp febrile reaction lasting a few hours only. Diuresis began the day after the first dose of serum, apparently stopped on November 26 and was reinstated after the second dose, after which it went on to completion.

Later in the same month edema again developed, and Jan. 8, 1938, an abdominal paracentesis was performed. February 2 the patient had an attack with peritoneal symptoms and was given 100 cc. of convalescent scarlet fever serum, after which complete diuresis again took place. July 20 another treatment with concentrated serum (60 cc.) was given because of beginning edema. Slight diuresis followed, with a drop in weight.

This patient was then given a series of intracutaneous inoculations with an autogenous pneumococcus filtrate. During several weeks of this treatment the albumin gradually disappeared from the urine. She has now been entirely well for almost one year.

Case 3 demonstrates complete diuresis with the concentrated serum, although this was not immediately followed by cure of all symptoms. Eventual recovery succeeded autogenous filtrate treatment.

CASE 4.—J. C., a boy aged 4 years, was admitted to the Children's Memorial Hospital March 23, 1939. Two weeks before his mother had noticed that his eyes were swollen and that he had gained 10 pounds (4.5 Kg.) in a very short time. During the last few days his whole body had become "fat" and for the past six days the scrotum had appeared swollen. There was no history of any antecedent infection, and his sleep and appetite were good.

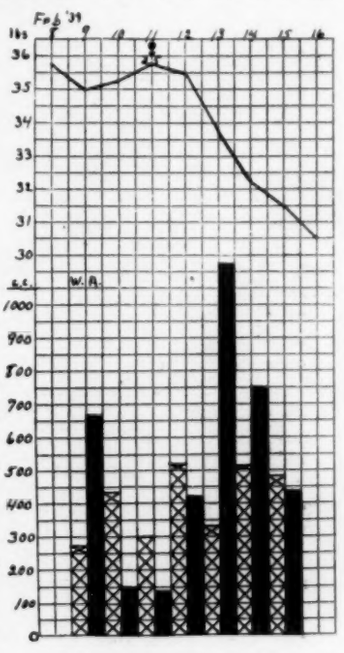


Chart 4 (case 5).—Complete diuresis following one injection of 25 cc. of four times concentrated serum. The patient has had subsequent attacks of edema and is awaiting further treatment.

Physical examination revealed a slightly reddened left ear drum and no other abnormalities except the anasarca, which was extreme.

The child was given 35 cc. of four times concentrated serum intravenously March 26 and 50 cc. March 28 and March 31. His weight curve, which had been rising about 1 pound (0.5 Kg.) daily, flattened out, and diuresis began. April 12, however, he began to pass less urine and the loss of weight stopped. Pharyngitis with moderate cervical adenitis associated with no fever was evident April 13. Since then the edema has reappeared and the patient is still under treatment.[2a]

Case 4 illustrates incomplete diuresis, interrupted by infection.

CASE 5.—W. A.,[3] a boy aged 2 years, was admitted to the Children's Memorial Hospital Feb. 8, 1939, because generalized swelling had been increasing for about six weeks. One week before admission, following a febrile "cold," there had been some decrease, but the edema later became more pronounced.

Physical examination showed no abnormality except the subsiding infection and the anasarca.

February 11, four times concentrated serum (25 cc.) was given, following which complete diuresis occurred. The edema again returned on April 13, and 37.5 cc. of four times concentrated serum was given that day; this was followed by another diuresis. At the present time the patient is awaiting further treatment, which will be given as soon as a febrile infection subsides.

2a. This patient has since died of septicemia.
3. Presented with the permission of Dr. Sigurd Kraft.

CASE 6.—D. B., a boy 2 years and 9 months old, entered the Children's Memorial Hospital July 30, 1938, with the history that he had been swollen for four months. There was no known antecedent illness. Physical examination showed normal status except for generalized edema.

The patient's course in the hospital is reflected by a wave-like weight curve with alternating ascents and declivities, some of which can be accounted for by "colds" and some of which are unexplained. On at least four occasions complete diuresis was apparently initiated by intravenous administration of concentrated human blood serum. At one time (Dec. 29, 1938, to Jan. 15, 1939) repeated small 10 cc. injections were given daily during a period of increasing weight with no effect whatever on the edema. January 29 the child became desperately ill with peritoneal symptoms, recovering by crisis after 100 cc. of convalescent scarlet fever serum was administered. During the convalescence from this attack, however, a testicular abscess developed which was drained surgically February 19. A pure culture of pneumococci was grown from the pus and he was treated intradermally with a filtrate from this growth. After this episode his weight reached its lowest, 27 pounds (12 Kg.). Mumps developed March 3 with no complications. After chickenpox a few weeks later he had another peritoneal attack and was treated with convalescent scarlet fever serum and sulfapyridine, after which he lost all his edema. The patient has recently undergone a relapse and is under treatment again.

TABLE 1.—*The Effect of Treatment in the Present Series of Cases*

Case	Time Before Treatment	Dosage, Cc.	Effect on Urinary Output	Amount of Albumin at Present
1	12 days	50	Complete diuresis	0
2	13 days	50, 50, 25	Complete diuresis	0
3	13 days	30, 40	Complete diuresis	0
4	14 days	35, 50, 50, 40	Incomplete diuresis	Death, septicemia
5	6 wk.	25	Complete diuresis	4 plus (under treatment)
6	4 mo.	35, 25	Complete diuresis	
		45	Complete diuresis	
		35, 35, 70, 70	Complete diuresis	
		25, 25, 25, 25	Complete diuresis	
		10 daily (15 doses)	Questionable result	Trace to 1 plus
7	6 mo.	40, 50, 25	Complete diuresis	
		25, 25	Complete diuresis	

TABLE 2.—*Present Status of Sixteen Patients, in Order of Time Elapsed Before Treatment with Serum*

Case	Time Before Treatment	Amount of Albumin at Present	Last Observation
G. R.	12 days	0	Symptom free
S. C.	13 days	0	Symptom free
A. M.	14 days	0	Symptom free
J. C.	16 days	.....	Death, sepsis
C. P.	21 days	0	Symptom free
N. T.	4 wk.	.....	Death, sepsis
G. P.	4 wk.	0	Symptom free
W. A.	6 wk.	4 plus	Under treatment
M. Y.	6 wk.	0	Symptom free
J. R.	4 mo.	0	Symptom free
D. B.	4 mo.	3 plus	Under treatment
G. B.	5 mo.	1 plus	Symptom free
J. A.	6 mo.	0	Symptom free
J. F.	3 yr.	.....	Death, sepsis
F. M.	4 yr.	.....	Death, renal insufficiency
A. C.	4 yr.	.....	Unknown status

Case 6 illustrates the repeated diuretic effect of concentrated serum in large doses and its ineffectiveness in small, often repeated doses. In this boy edema recurred in spite of repeated complete diureses. He is at present convalescent.

CASE 7.—J. A., a girl aged 1½ years, was admitted to the Children's Memorial Hospital Jan. 22, 1939, with a history of generalized swelling for six months. She had been treated during part of this time for an allergic condition, and the edema had disappeared and returned in a recent wave.

Physical examination showed normal conditions except for the edema, which was generalized. However, during the next few days there developed a streptococcic sore throat with otitis media and a moderately high fever, which subsided in about one week.

The patient was given concentrated serum on January 25 (40 cc.) and on January 29 (50 cc.). During this period the weight curve rose, but diuresis began February 3, at about the time when the temperature became normal. She became edema free February 9 and was given another dose of 25 cc. of serum February 15. Albuminuria persisted. She returned to her home in West Virginia, where she contracted influenza and went through another bout of moderate edema. Subsequently she had another major episode and was successfully treated with two injections of 25 cc. of concentrated serum. Complete diuresis followed and the albumin disappeared. At the present time she is completely well.

Case 7 illustrates the delayed response or absence of response to concentrated serum in the presence of an infectious process, as well as the diuresis often seen after fevers.

COMMENT

These reports and table 1 demonstrate that the treatment usually appeared effective, as diuresis and weight loss followed the serum administration and as in most instances the diuresis, when once initiated, went on to complete elimination of edema fluid without additional serum. Why it is that some of these patients proceeded to complete recovery and lost the albuminuria and others went on to show long continued urinary abnormalities and repeated attacks of edema, we are at a loss to explain. However, it is evident that complete recovery was much more frequent in the early stages (table 2).

TABLE 3.—*End Results in Sixteen Cases*

Status	No. of Cases
Symptom free	9
With albuminuria	1
Edematous, under treatment	2
Unknown	1
Death	4

TABLE 4.—*Results with Nine Patients Treated Less Than Six Weeks After Onset*

Status	No. of Cases
Complete recovery	6
Edematous, under treatment	1
Death	2

In table 2 the patients described in last year's report and in the present paper are grouped together according to the time which elapsed between the first known symptoms and the first injection of serum. This shows clearly the relatively good prognosis for those with recent onset (tables 3 and 4). Of the nine treated before six weeks had elapsed, six were completely well when last observed and two more were still under treatment. This suggests that, in order to be most effective, this method should be applied early rather than as a last resort.

In the previous report the evidence suggested that concentrated serum might be ineffective when administered in the presence of an acute infectious process. In this series this impression has been borne out (cases 6 and 7). For this reason, wherever possible we wait

until all manifestations of an acute infection have subsided before injection. This has the added advantage that it gives a chance for spontaneous diuresis to occur if it is going to take place and decreases the possibility that in this series we have attributed such spontaneous diuresis to a serum effect.

In some clinics, reactions have been disturbing. It has been our observation that severe febrile elevations have happened only when the serum shows considerable hemolysis. We think that rapid handling of the blood to separate the serum before much hemolysis has had a chance to take place will eliminate this difficulty. The serum should be distinctly yellow, not red. In the present series none of those treated with the Chicago serum had any alarming reactions.

The mechanism which initiates the diuresis remains unknown. It is certain that it is not due solely to increase in the blood serum proteins, for they have not been significantly elevated for any prolonged period. It is conceivable that the injected serum, being water thirsty, may act as a continuous conveyor of water from the tissues to the kidneys. But we are impressed most of all with the similarity between these diureses and the spontaneous renal crises. These responses look as though in some way the serum had supplied the necessary material to make this natural process possible.

It should be noted that this method has uniformly produced the diuretic effect only in patients whose urine has never shown red blood cells. This fact suggests that the pathogenesis of hematuric types of edema is not similar to that of pure nephrosis.

SUMMARY

Seven additional patients with pure nephrosis were treated with four times concentrated pooled human serum.

Diuresis usually occurred in these patients and went on to complete elimination of edema fluid as a rule, sometimes to complete recovery from the nephrosis.

Patients with other types of renal edema, notably those with any hematuria, were not benefited.

When the cases first reported in the present paper were listed, together with nine cases reported in 1938, according to the elapsed time between first symptom and first treatment with concentrated serum, it became evident that those treated earliest had a much more favorable subsequent course. This suggests that this method should be used by first choice rather than as a last resort.

Reactions were insignificant unless hemolysis had occurred in the serum. This is shown by its being definitely red.

If the patient showed evidence of acute infection, the serum was ineffective.

723 Elm Street—2376 East Seventy-First Street.

Etiology of Chilblain.—In addition to exposure to cold, there is also a constitutional factor in the development of chilblain. The condition usually affects individuals with anemia and poor muscle tone. It is particularly common in children and young women who have a low basal metabolic rate or ovarian hypofunction. There seems to be avascular instability which is more appreciable in youth and which gradually improves with the years. Peripheral circulatory disturbances also play a role. A tight shoe will tend to increase the frequency of the occurrence; a stocking that is too small can act in a similar way. Direct pressure on the skin causes local anemia and venous stasis is frequently seen in connection with the chilblain. —Hauser, Emil D. W.: Diseases of the Foot, Philadelphia, W. B. Saunders Company, 1939.

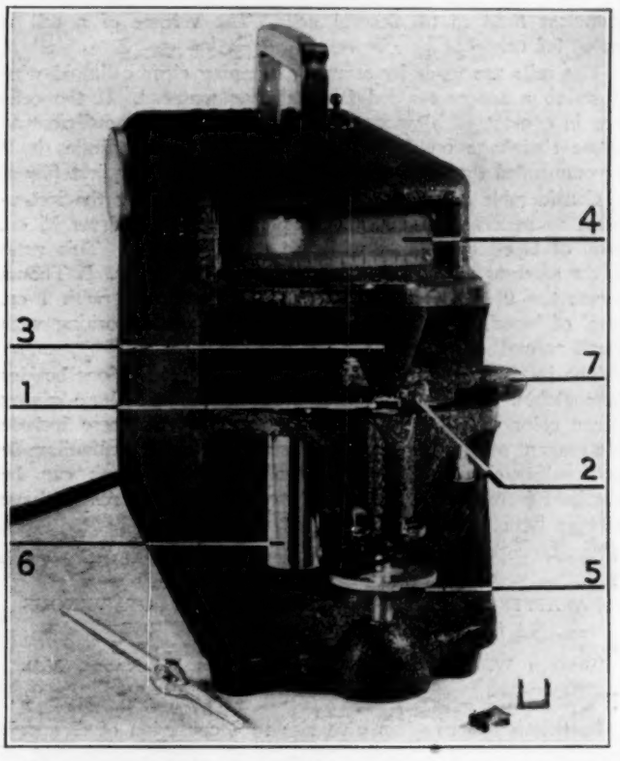
Clinical Notes, Suggestions and New Instruments

A PHOTOELECTRIC HEMOGLOBINOMETER

GEORGE F. DICK, M.D., AND DANIEL S. STEVENS, PH.D., CHICAGO

The uncertain results given by the visual types of hemoglobinometers have suggested the use of photoelectric apparatus for the determination. However, the photoelectric colorimeters have been too expensive for purchase by most physicians.

Our photoelectric hemoglobinometer is so designed that it can be manufactured for a price comparable to the cost of other hemoglobinometers and furthermore is simple and convenient to use. This is accomplished by using a small disposable celluloid cell for holding the diluted blood. This feature has resulted in an apparatus that can be constructed with the economies of modern molded plastics.



Dick-Stevens photoelectric hemoglobinometer, showing the disposable cells and the blood diluting pipet.

The operation of the hemoglobinometer can be seen by reference to the illustration. The disposable cell (1) is positioned in the light beam by a slot in the cell guide (2). The cone (3) which encloses the photo cell and filter has a small hole in its tip. This allows light from a restricted area of the disposable cell to reach the photo cell. The photoelectric current is indicated by a galvanometer the spot of which is focused on the scale (4). This scale is in an easy position to read and can be calibrated directly in units of hemoglobin.

The details of making a reading are as follows: An empty cell is placed in the instrument and the electric plug connected to the alternating current line. Light from a small bulb beneath the stage passes to the photo cell and causes the galvanometer to deflect.

The instrument should be allowed to warm up while the blood dilution is prepared. This is done by drawing blood from a cutaneous puncture into the pipet and then diluting with 0.1 per

From the Department of Medicine, University of Chicago.

cent sodium carbonate solution. Two minutes should be given for the red cells to lake, although a longer time does not involve a time factor.

The next step is to set the galvanometer spot at full scale deflection. This is done by raising or lowering the light source with a slight turn of the wheel (5). The disposable cell is now filled with the diluted blood from the pipet. This diminishes the amount of light reaching the photo cell, and the galvanometer moves down the scale to a position which indicates the amount of hemoglobin in the blood sample. The used cell drops into the container (6) when the handle (7) is drawn forward.

The instrument is calibrated by using several blood samples the hemoglobin content of which has been determined by the van Slyke oxygen capacity method. The hemoglobin values given by the machine can be relied on to be within 3 per cent of the correct value if a reading is taken using a single cell. This is sufficient for most purposes. However, the certainty of the reading can be increased by taking the average of two or more readings. This is easy to do since each pipet contains sufficient fluid to fill several cells. The volume of a cell is about 0.2 cc.

The cells are made by securely fastening clear celluloid windows to a spacer molded from similar material. If the cells are in contact with water for a time they absorb sufficient to cause shrinkage on drying. To avoid any uncertainties it is recommended that the cells be discarded after their first filling.

Considerable attention has been given to making the instrument as generally useful as possible. The pipets draw 15 cu. mm. of blood and dilute with the ratio of 1:100. This ratio is the same as with N. B. S. certified Thoma pipets. If Thoma pipets are used the hemoglobin can be determined with 1 cu. mm. of blood. This is of special interest when working with small animals.

The instrument can be used for other determinations besides hemoglobin. The most favorable substances are those giving dense color reactions that absorb green light. These include the reagent of the van den Bergh test for jaundice, sulfanilamide and sulfapyridine. Sufficient blood for these tests can be obtained from a cutaneous puncture. Satisfactory results have already been reported for such microtechnics.[1]

PARAFFINOMA SIMULATING SEQUELAE OF VENOUS STASIS: A MALINGERER'S DEVICE

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Factitious lesions often give rise to a confusion of diagnosis in many fields of medicine, sequelae of venous stasis and of varicose veins being no exceptions. We are reporting such a case which, without the significant history elicited, would have represented a rather bizarre and confusing picture.

A man aged 51, a resident of Canada after the war of 1914-1918, registered at the Mayo Clinic June 24, 1939. The history, physical examination and laboratory tests were suggestive of nothing significant except lumbar backache and varicose veins of the left lower extremity, considerable swelling and what appeared to be severe brawny infiltration or a low grade of chronic cellulitis of the left ankle and lower third of the left leg. The patient was referred to us for an opinion regarding his varicose veins.

Our examination showed incompetence of the left great saphenous vein and moderate sized varicosities of the left thigh and leg. Interesting, however, was the extreme degree of brawny infiltration and increase in the size of the left ankle. On palpation, this region was almost stony hard. This seemed a rather unusual although not impossible sequela of the moderate degree of varicosity present and, on questioning, further significant history was elicited.

At the beginning of the war of 1914-1918 the patient had lived in a political district that was unwillingly subject to imperial

Fig. 1.—Medial aspect of left leg; varicosities, brawny induration and swelling are obvious.

Russia. In order to avoid being drafted into the army, the patient had gone to a physician, who had injected hot wax into the subcutaneous tissues of the left ankle. This had caused the ankle to become swollen and, although the pain had lasted but a short time, the swelling had continued to the present. The deception apparently worked so well that the patient was able, by this means, to escape the Russian draft. He also stated that this physician had injected wax in other parts of the body of many other persons for the same purpose. The accompanying illustrations serve to show the effects produced in this case.

Fig. 2.—Posterior aspect; asymmetry due to brawny induration, the result of paraffinoma, is evident.

Unfortunately, the patient did not remain at the clinic for treatment. It would have been interesting to see to what extent, if any, the veins contributed to the brawny infiltration.

We have presented this case mainly to give another example of the many ways used by charlatans to produce artificial lesions in time of war and to show the results of such a lesion after a lapse of about twenty-five years.

1. MacLachlan, E. A.; Carey, B. W., Jr., and Butler, A. M.: Determination of Para-Aminobenzenesulfonamide; Micromethod, J. Lab. & Clin. Med. **23**: 1273-1277 (Sept.) 1938. Marshall, E. K., Jr., and Cutting, W. C.: Absorption and Excretion of Sulfanilamide in Mouse and Rat, Bull. Johns Hopkins Hosp. **63**: 328-336 (Nov.) 1938.

From the Section on Postoperative Care, the Mayo Clinic. Dr. Mader is fellow in surgery, the Mayo Foundation.

A CASE OF COLD URTICARIA WITH AN UNUSUAL FAMILY HISTORY

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AND
HOWARD A. RUSK, M.D., ST. LOUIS

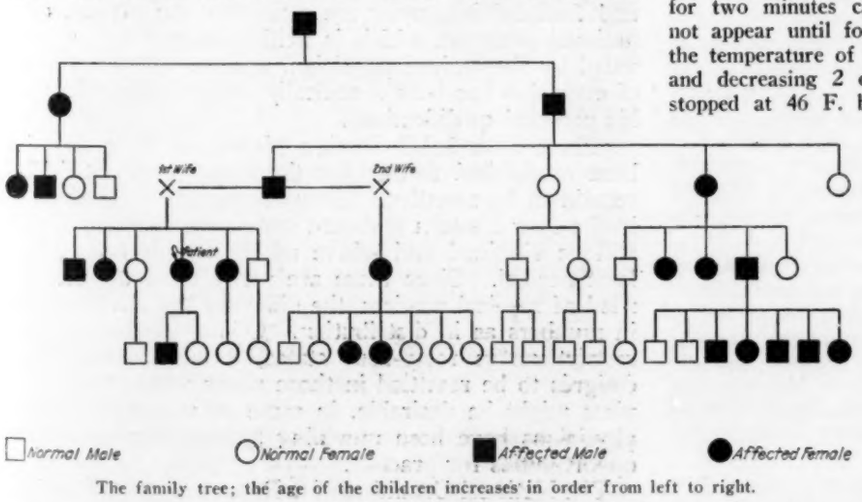
Many cases of urticaria produced by cold have been reported. The case to be reported is interesting not only because of the severity of the attacks but also in view of the extensive family history of urticaria caused by the same physical agent.

REPORT OF CASE

Mrs. R. M., aged 25, has had "all her life" an eruption which comes on when she is exposed to cold. In very cold weather when she goes outside even for a short time urticaria appears in about half an hour. This is accompanied by a chill and fever, the temperature ranging from 101 to 103 F., which lasts from four to six hours. Often there occurs a stiffness of the joints, with erythema of the adjacent tissues lasting from six to eight hours, and if the exposure is great enough it may last twenty-four or even forty-eight hours. At times headache accompanies an attack. In warmer weather she often notices urticaria in the morning on an arm or some other part of the body left out from under the covers during the night. No untoward effects have been noted from taking cold drinks. There is very little itching, but usually there is a "sticking" or burning sensation. The patient says that the eruption is worse in cool damp weather than it is when it is cool and dry.

The past history is irrelevant. She has had an eruption from quinine, phenolphthalein and acetylsalicylic acid which is entirely different. It fades in several days and is more of a diffuse erythema with marked pruritus. Her father has hay fever. There is no other familial history of allergy in other forms.

The family history is most interesting, however. Of forty-seven relatives who were remembered by the patient and her father, twenty-three have had the same allergy to cold. There seems to be little difference in the severity of attacks in all of them as far as the father and daughter know. Urticaria developed in the patient's son at 5 weeks of age, and he even had a chill after being exposed to cold at this early age. Her daughter does not have this condition. The patient's father, who is now 61, still has urticaria, and it is even more severe now than it was some years ago. Many physicians have seen various members of the family and tried different methods of therapy, all with no improvement. While some of the offspring of involved parents have not had it, in no instance has it been transmitted by one who has not had the condition, as far as the family has been traced. This is particularly evident in the patient's normal aunt, who has a boy and a girl, each of whom has two children, and none are affected.



The family tree; the age of the children increases in order from left to right.

Routine laboratory investigations of the patient were all within normal limits. The urine was normal even after an exposure to cold. The basal metabolic rate was —16 per cent. Numerous intradermal tests with inhalants and foods done in January 1938 at Washington University Clinics all gave negative results. Nasal smears showed many eosinophils, and a diagnosis of allergic rhinitis was made in January 1938. At about this time a diagnosis of early otosclerosis was made at the same clinic after a series of hearing tests. There is no family history of this condition.

A bath in which her arm was immersed in water at 50 F. for two minutes caused pain and erythema. Urticaria did not appear until four hours later. An attempt at decreasing the temperature of the water baths starting down from 60 F. and decreasing 2 degrees F. a day was unsuccessful. She stopped at 46 F. because of the pain.

TABLE 1.—*Results of Special Potassium Metabolism Studies*

10-17-38: Fasting blood serum potassium..... 26.1 mg. %
(Normal by our method)..... 19.5 mg. %

10-18-38: Epinephrine tolerance test (0.5 cc. of 1:1,000 epinephrine intramuscularly)

Resting	Blood Pressure	Pulse	Blood Potassium, Mg. per 100 Cc.
10 minutes	98-58	84	24.1
15 minutes	108-62	96	....
30 minutes	108-56	84	22.8
45 minutes	108-50	98	20.2
1 hour	102-50	100	19.0
2 hours	98-40	92	18.0
3 hours	110-60	96	19.8
4 hours	110-68	86	20.2
5 hours	130-88	..	21.3
6 hours	106-56	88	23.0

10-29-38: Patient exposed to cold for one hour; chill developed with marked urticaria. Blood potassium determinations were made at hourly intervals during the duration of hives and were as follows:

	Blood Potassium, Mg. per 100 Cc.
1 hour	21.5
2 hours	21.0
3 hours	21.3
4 hours	21.8

10-31-38: Patient was put on porch and cooled to the point of chilling with typical urticarial attack following; 5 units crystalline insulin was given with the following result:

	Blood Sugar, Mg. per 100 Cc.	Blood Potassium, Mg. per 100 Cc.
Before insulin	90	20.7
2 hours after insulin	62	20.5

11-2-38: Patient chilled during night but received crystalline insulin at 10 p. m. 11-1-38 and at 7 a. m. 11-2-38. At 8:30 a. m. 11-2-38 the blood sugar was 46 mg. per hundred cubic centimeters; blood potassium, 18.9 mg.

The results of special potassium metabolism studies carried out at the Jewish Hospital are given in table 1.

The patient was then placed on a low sodium, high potassium diet and potassium chloride 20 grains (1.3 Gm.) three times a day with crystalline insulin twice a day for one week. At the end of this time there had been no subsidence of symptoms but the blood potassium was essentially normal.

Large doses of splenic extract and histaminase were tried without success, although the blood potassium was maintained at a level of 20.3 per hundred cubic centimeters, checked at weekly intervals. This was contrary to previous observations [1] in that ordinarily when an increased blood potassium is reduced to normal in urticaria the symptoms subside.

Tests on other members of the family suffering from cold urticaria, taken at varying times, gave results presented in table 2.

It is unusual to find twenty-three members of a family pedigree traced through forty-seven relatives, all of whom suffered

From the Department of Dermatology, Washington University School of Medicine, service of Dr. M. F. Engman, and the Laboratories of the Jewish Hospital, St. Louis.

1. Rusk, H. A.; Weichselbaum, T. E., and Somogyi, Michael: Changes in Serum Potassium in Certain Allergic States, J. A. M. A. **113**: 2395 (June 10) 1939.

from the same form of allergy. Usually some other manifestation is present in many of the relatives. It is also interesting that thirteen of the twenty-three involved relatives were females. Cockayne [2] says that whatever manifestation of allergy is studied it is found that the number of males affected exceeds that of females. This is not true in this particular pedigree.

TABLE 2.—*Blood Potassium in Other Members of Family Suffering with Cold Urticaria*

	Blood Potassium, Mg. per 100 Cc.
Uncle	21.5
Cousin (diphtheria antitoxin 2 days previously)	22.4
Sister	19.5
Cousin	19

Potassium metabolic studies revealed the usual abnormalities reported previously by one of us,[1] except that in the acute attack there was not the usual rise in blood potassium. In spite of the lowering of the blood potassium to normal and its maintenance at this level for a long period there was no improvement in the clinical symptoms.

The severity of the attacks of allergy to cold, the extensive family history and the unusual refractiveness to all types of therapy have made this case a most interesting one.

1219 Carew Tower—901 Beaumont Medical Building.

QUININE TREATMENT OF DYSTONIA MUSCULORUM

FREDERICK LEMERE, M.D., SEATTLE

In a recent article Hassin [1] reported treatment of three cases of dystonia musculorum with quinine with definite relief of the excessive involuntary, uncontrollable movements characteristic of this disorder. Because this disorder is rare and because of the marked benefit obtained with quinine, it was felt that the following case should be reported:

History.—A woman aged 23, single, who had to be assisted into the office because of twisting, writhing movements of the extremities, head and trunk, had a blister on the left foot at about the age of 11, followed by weakness of the left ankle and pain in the left knee and hip. Disability of the left leg gradually developed, with the onset of twisting contortions of the back and neck during the past three years. The torsion spasms of the trunk had become so bad that she could not walk without assistance and was confined to her home.

She had been seen by many doctors, including several at orthopedic clinics, all of whom had diagnosed hysteria except one, who diagnosed "St. Vitus dance." Several psychologists and social workers had worked out beautiful mechanisms for her illness, based on overprotection and thwarted ambitions to be a dancer and singer. She was referred as a psychiatric problem and had been told she could "snap out of it if she would only try." All this only made her worse, as emotional stress and strain aggravated her contortions.

Examination.—The patient was an attractive young woman with constant torsion spasms of the neck and trunk which would bend her almost to the floor and sweep her around in uncontrollable twisting movements. The neurologic examination was negative, except for these torsion spasms. Mentally she was depressed over her condition and the idea that had been pounded into her head that she was responsible for not controlling herself.

The diagnosis was dystonia musculorum.

Treatment consisted of quinine to the point of cinchonism.

Progress.—The patient's mother one month later wrote:

Have I written you since Arline has started taking the quinine? When she first started we gave her 15 grains a day, but after three days she was unable to take it as it made her so sick. She got such a chill she could hardly stay in bed. After three days we started giving her 9 grains a day and now she is back to 15 grains a day. She is feeling so well, has gained 15 pounds and can walk ten blocks easily. If her neck was straight she would be well. After having taken the quinine for less than two weeks the jerking in her body stopped entirely, and she sits on a chair just as well as any one.

Is there anything we can do about her neck? It makes her very tired by night.

When we took her to you at first we could not let her touch a thing as she dropped it, and her body was black and blue all over from falling, and now she can do anything she cares to, she has perfect control of her hands, and I haven't seen her fall in two months. She has even done some dancing around the house.

A brace was advised for the neck but one month later the mother wrote:

I don't think a brace would really pay because right along she makes remarkable improvement.

CONCLUSION

Hassin's belief that dystonia musculorum is due to a disturbance of muscular tone and not to a central lesion in the basal ganglions is borne out by the beneficial effects of quinine, which acts on the myoneural junction.

706 Medical and Dental Building.

2. Cockayne, E. A.: Inherited Abnormalities of the Skin and Its Appendages, ed. 1, London, Oxford University Press, 1933, p. 364.

1. Hassin, G. B.: Quinine and Dystonia Musculorum Deformans, J. A. M. A. **113**: 12 (July 1) 1913.

Special Articles

THE ÉMIGRÉ PHYSICIAN IN AMERICAN MEDICINE

DAVID L. EDSALL, M.D.
Honorary Chairman, National Committee for Resettlement of Foreign Physicians
TRYON, N. C.

During the past year, articles in the medical press have continued to give the impression that the United States is suffering from an influx of vast numbers of foreign physicians, whereas the official figures from the Department of Immigration show that between July 1934 and September 1939 some 2,544 physicians immigrated to this country. Emphasis has been laid repeatedly on the need to restrict the licensure of foreign physicians in order to protect both the medical profession and the public, since the medical and ethical standards of these physicians might fall below our own. This attitude is to a large extent a result of the economic problems which confront nearly every American physician. Changing methods of medical practice and financial insecurity are a part of the present day national situation, which is neither caused nor aggravated by the émigré physician, against whom a policy of exclusion has been specifically directed regardless of his personal qualifications.

More than 1,000 foreign physicians have already been established throughout the country; about 1,500 remain to be resettled. They are largely concentrated in the four Eastern seaboard states, where licenses can still be obtained and where additional physicians are least needed. Since there are many rural districts in need of medical services, the difficulty lies not so much in numbers as in distribution. Owing to the existing restrictions in forty-four states, it is impossible for émigrés to be resettled in those states where their services might be desirable, in some of which American physicians have been unwilling to avail themselves of opportunities for practice.

The National Committee for Resettlement of Foreign Physicians is convinced that this attitude toward the refugee physicians is based on a misapprehension of the facts. I propose to restate the entire problem so that it may be dealt with on a more realistic basis. This committee is fully aware of the need of a careful evaluation and selection of émigré physicians and has consequently occupied itself with a study of the qualifications of individual physicians to eliminate the unfit. It is now incumbent on the country to participate in the equitable distribution of qualified individuals.

THE NATIONAL COMMITTEE FOR RESETTLEMENT OF FOREIGN PHYSICIANS

In my letter to THE JOURNAL in May 1939 I [1] stated the purposes of the National Committee for Resettlement of Foreign Physicians as threefold: (1) to evaluate the eligibility of individual émigré physicians to practice medicine in the United States, (2) to assist those who were found competent in preparing for examinations and for American medical requirements and (3) to further their resettlement in those parts of the United States where medical services are needed. Our committee has been actively engaged in this program in cooperation with the National Refugee Service, Inc. (formerly the National Coordinating Committee).[2] Prominent physicians throughout the country are now forming state committees. Table 1 lists the groups already organized and functioning. In addition, California, Georgia, Louisiana, Missouri, North Carolina, Ohio, Pennsylvania, Texas and Virginia have cooperating committees, and it is intended that in the near future these and others shall be represented on the National Committee.

THE FACTS ABOUT FOREIGN IMMIGRATION

It may be helpful to review the situation of general immigration to the United States since 1932 as a background for the examination of the case of refugee physicians.

It is not generally understood that between July 1, 1932, and July 1, 1938, the total emigration from the United States to Europe exceeded by 4,000 the total immigration to the United States. Thus the foreign population of the country was actually shrinking during that period.[3]

TABLE 1.—*Groups Organized and Functioning on Resettlement of Émigré Physicians*

Connecticut	Illinois	Maryland
Dr. Harvey Cushing †	Dr. Joseph A. Capps	Dr. Lewellys Barker
Dr. Alice Hamilton	Dr. Julius Hess	Dr. John M. T. Finney
Dr. Samuel C. Harvey	Dr. Rollo K. Packard	Dr. William H. Howell
Dr. John P. Peters	Dr. William F. Peterson	Dr. Edwards A. Park
Dr. M. C. Winternitz	Dr. D. B. Phemister	
Massachusetts	**New Jersey**	**New York**
Dr. Stanley Cobb	Dr. Henry C. Barkhorn	Dr. Ernst P. Boas
Dr. David L. Edsall	Dr. Max Danzis	Dr. Alfred E. Cohn
Dr. Jacob Fine	Dr. Royal Schaaf	Dr. Lewis A. Conner
Dr. A. Baird Hastings	Dr. Edward W. Sprague	Dr. N. Chandler Foot
Dr. Joseph Pratt	Dr. Harrison Martland	Dr. J. Bentley Squier

† Deceased.

In the last seven years there have been no changes in the quota regulations. The total number of immigrants from all countries has been less than the potential peak under the quotas.[4]

The specific problem of refugee physicians involves only 2,544 medical immigrants and not a cumulative yearly influx. The potential number to arrive from Europe in the future is minimal. During the period from July 1, 1934, to Sept. 1, 1939, when these 2,544 foreign physicians immigrated, a total of 27,500 physicians were newly licensed in the United States. We are therefore dealing with a comparatively small and limited group.

1. Edsall, D. L.: A Program for the Refugee Physician, J. A. M. A. **112**: 1986 (May 13) 1939.
2. Edsall [1] (for the structure and function and subcommittees of the National Coordinating Committee; for further information, apply to Charles H. Jordan, Secretary, Committee for Resettlement of Foreign Physicians, 165 West Forty-Sixth Street, New York).
3. Refugee Facts (American Friends Service Committee pamphlet), p. 12.
4. Social Work Today, December 1939, p. 14: "Who Is the New Immigrant?"

CENTRAL OFFICE OF THE COMMITTEE (NATIONAL REFUGEE SERVICE, INC., NEW YORK)

Since the organization of the National Committee for Resettlement of Foreign Physicians in February 1939 to Jan. 1, 1940, 1,646 foreign physicians have been registered at the central office in New York. Many of these men had been in the United States for several years. A complete file of individual credentials and qualifications is made available to the advisory boards of the twenty medical specialties, and each candidate is carefully interviewed and evaluated by qualified American physicians. Those adjudged unfit to practice are advised to retrain for other occupations. By means of lectures, courses and voluntary externships, those recommended for resettlement are acquainted with American methods in medicine while they are studying for licensing examinations.

The statistics of this office show that aside from the physicians who have been licensed and are practicing in the state of New York there are 106 licensed physicians awaiting resettlement and 990 awaiting licensure. Sixty have been placed in internships and hospital positions in New York State and seventy-eight in twenty-four other states. Twelve have obtained laboratory positions. These figures do not take into account externships and supernumerary internships.

Physicians have been settled in rural sections of Connecticut, Illinois, Maryland, Massachusetts, New Jersey, New York and Ohio. Gratifying reports indicate that they have been welcomed and have made a good adaptation to the local scene. Interns have also proved their capacity to meet American medical standards. Some men have been well received in chairs of medicine—often in departments that were previously understaffed—in the laboratory sciences, in the specialties, in hospital laboratories and in public health work. Only a trifling number of complaints have been made about their attitude, performance or assimilability.

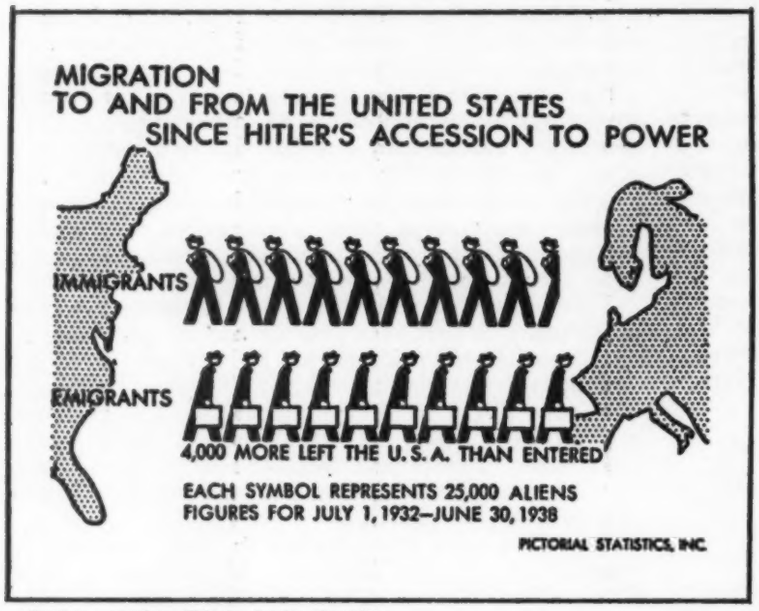
DIFFICULTIES WITH THE RESETTLEMENT OF FOREIGN PHYSICIANS

While the selection and retraining of foreign physicians has been proceeding according to this program, resettlement has been slow because of a general misunderstanding of the problem, as reflected in the restrictive regulations imposed by many state examining boards. THE JOURNAL recently published a table showing the statutory provisions and regulations of the states with respect to citizenship and first papers.[5] Table 2 analyzes this problem and brings the statistics to date. This revision has been necessary because certain serious obstacles to the licensure of refugee physicians were omitted from the original. For example, it did not specify graduation from an American college and intern requirements as prerequisites to licensure. In addition, since its original publication there have been changes in state laws.

Required Citizenship.—Analysis of table 2 shows that citizenship is mandatory by statute in ten states and by regulation of state medical boards in eighteen. The question arises whether the resolution of the House of Delegates of the American Medical Association, June 13, 1938,[6] recommending that citizenship be made a prerequisite to medical licensure is to the best interests of medical standards and whether such laws or regulations are constitutionally tenable.

5. Citizenship as a Condition Precedent to Medical Licensure in the United States, editorial, J. A. M. A. **113**: 1496 (Oct. 14) 1939.
6. Proceedings of the San Francisco Session, Report of House of Delegates, J. A. M. A. **111**: 41, 45 (July 2) 1938.

The citizenship requirement is both unfair and futile, for it is not a permanent barrier to licensure, and five years of waiting for citizenship is tantamount to five years of medical inactivity, deterioration of professional skill and acumen—five years of sapping of nervous stability. Many of the émigré physicians have lived through not one but several uprootings. They now come to the United States with declared intent to become citizens, willing and eager to take up residence in those regions where doctors are needed and to become a part of whatever community wants them. It is a contravention of both common sense and justice to create circumstances that compel them to live in large cities near relief centers, where they have the parlous choice of waiting five debilitating years or of entering professional competition precisely where the profession is most overcrowded.


MIGRATION
TO AND FROM THE UNITED STATES
SINCE HITLER'S ACCESSION TO POWER
IMMIGRANTS
EMIGRANTS
4,000 MORE LEFT THE U. S. A. THAN ENTERED
EACH SYMBOL REPRESENTS 25,000 ALIENS
FIGURES FOR JULY 1, 1932–JUNE 30, 1938
PICTORIAL STATISTICS, INC.

Courtesy, American Friends Service Committee

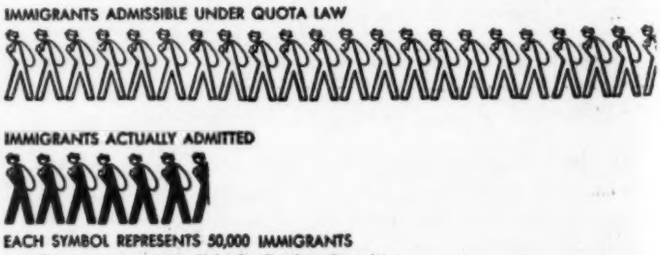
Fig. 1.—Migration to and from the United States since Hitler's accession to power.

The constitutionality of the citizenship requirement for medical practice is distinctly questionable and has never been passed on by any appellate court.[7] As early as 1926 the attorney general of South Dakota declared it to be unconstitutional. More recently the attorney general of Texas delivered a similar opinion, holding a law of that state to be invalid, and the attorney general of Utah declared the constitutionality of the citizenship requirement to be questionable and ruled that the examining board cannot lawfully adopt a regulation imposing that requirement. THE JOURNAL recently reported a decision of a district court in Texas upholding the citizenship requirement.[8] Unfortunately, this report is misleading. The actual decision of the court was in favor of the applicant on the ground that he had filed his application before the statute was amended to require citizenship. Furthermore, the applicant in this case was a resident of Mexico, and thus the issue of the constitutional rights of a lawful resident of the United States was not before the court. The court's opinion was not made a matter of record, and the attorney general remained of the opinion that the imposition of the citizenship requirement violates both the state and federal constitutions. Finally Governor Olson, of California, in vetoing a bill that would have required citizenship for a license to practice medicine in that state, issued a statement in which he said:

> This bill would eliminate practice by some of the world's greatest medical scientists. It would also work a hardship on other qualifying physicians by compelling a wait of several years necessary to acquire citizenship before being permitted to earn a livelihood in their profession.
>
> This bill would deny such privileges to aliens even if they have declared their intention to become American citizens. All other civil rights and privileges are granted those who have declared such intention in every state or federal statute where citizenship qualifications are imposed.
>
> This bill is not directed toward an exclusion from medical practice on any basis of competency or qualification for such practice.
>
> Lastly, the Federal Government has control of the admission of aliens and the states should not, and probably as a matter of constitutional law cannot, deny such aliens a right to earn a livelihood in any proper pursuit.

Admission to State Board Examinations Restricted to Graduates of Approved American and Canadian Schools.—Only four states have statutes proscribing the licensing of foreign medical school graduates, but twenty-six bar them on the basis of regulations set up by state boards of medical examiners. Six of the latter group of states require fourth year attendance in a class A medical school in the United States. These regulations apply to American citizens who have studied abroad, as well as to refugee physicians.

The prevailing attitude of the American Medical Association on this issue is that "the Council on Medical Education and Hospitals does not grade or classify medical schools outside the United States or Canada. No opportunity is afforded for visiting and inspecting such schools, nor are official reports received from them. The Council therefore has no evidence on which to base a rating." [9] There is no doubt that the intention of this policy, as adopted by the state boards, is to safeguard medical standards, but its execution results in the exclusion of qualified foreign graduates from practice on the basis that their credentials cannot be evaluated.



Courtesy, American Friends Service Committee

Fig. 2.—Seven years of immigration to the United States (since Hitler) July 1, 1932-June 30, 1939.

In evaluating foreign graduates, the National Board of Medical Examiners uses a list of foreign medical schools which is virtually the same as that issued by the Royal College of Physicians in the British Empire, and this list is available and published. Blanket exclusion of continental schools cannot logically be supported by any group which has accepted the National

7. McIntyre, J. E.: Citizenship and Medical Licensure, J. A. M. A. **112**: 1075 (March 18) 1939.

8. District Court in Texas Rules State May Require Citizenship in Licensure of Physicians, editorial, J. A. M. A. **113**: 1495 (Oct. 14) 1939.

9. Medical Education in the United States and Canada, J. A. M. A. **113**: 772 (Aug. 26) 1939.

Board certificate. Certainly refugees who can pass the National Board examinations have demonstrated their qualifications in a convincing manner.

These problems require the broadest and best interpretation of the functions of licensing boards. These have been created to protect the community from undesirable or unqualified physicians, but nowhere have the boards been given the power to regulate the number of physicians permitted to practice in any state. The license to practice medicine is for the good of the community and not for the creation of monopolies in practice which will prevent competition.

adequate period of preparation. This has resulted from a fear of impending legislative or regulatory restrictions which would bar them from practice or which force them to be examined before the date on which such rulings became effective.

2. The foreign physician must study for examinations under adverse circumstances:

(*a*) Either he arrives in this country penniless and must live on the submarginal level provided by charitable organizations, or he must work at any job available to support himself and his family during the period of preparation.

(*b*) He is in most instances learning a language in which he must also be examined, a particularly difficult task for men

TABLE 2.—*Statues and Regulations Governing License to Practice*

	Require Citizenship		Require First Papers		Restricted to Graduates of Approved American and Canadian Schools		Require National Board Certificate		Require Internship	
	By Statute	By Regulation	By Statute	By Regulation	By Statute	By Regulation	Accepted	Prerequisite to State Board	By Statute	By Regulation
Alabama	..	+	..	..	..	..	..	+	..	+
Arizona	..	..	..	..	..	+[1]	..	..	..	..
Arkansas	+	..	..	..	..	+	..	..	..	..
California	..	..	..	..	..	..	..	..	+[2]	..
Colorado	..	..	..	+	..	..	..	+	..	..
Connecticut	..	..	+	..	..	..	..	..	..	..
Delaware	+	..	..	..	+	..	..	..	+	..
District of Columbia	..	..	..	..	..	+	..	..	..	+
Florida	..	+	..	..	..	+	..	..	..	..
Georgia	+	..	..	..	..	+	..	..	..	..
Idaho	+	..	..	..	..	+	..	..	..	..
Illinois	..	..	+	..	..	..	..	..	..	+
Indiana	..	..	..	..	..	+[1]	..	..	..	..
Iowa	..	+	..	..	..	..	..	..	..	+
Kansas	..	+	..	..	..	..	..	..	..	+
Kentucky	..	+	..	..	..	..	+	..	..	..
Louisiana	..	..	+	..	..	+	..	..	..	..
Maine	..	..	..	+	..	..	..	..	..	+
Maryland	..	..	..	+	..	..	..	..	..	..
Massachusetts	..	..	+	..	..	..	..	..	..	..
Michigan	..	+	..	..	..	+[1]	..	..	..	+
Minnesota	..	+	..	..	..	+	..	..	..	..
Mississippi	..	+	..	..	..	+[1]	..	..	..	..
Missouri	..	+	..	..	..	..	..	..	..	+
Montana	..	+	..	..	..	+	..	..	..	..
Nebraska	+	..	..	..	..	..	..	..	..	..
Nevada	..	+	..	..	..	+	..	..	..	..
New Hampshire	+	..	..	..	..	..	..	..	..	+
New Jersey	+	..	..	..	..	..	..	..	..	+[3]
New Mexico	..	..	+	..	..	+	..	..	..	..
New York	..	..	+	..	..	..	..	..	..	..
North Carolina	..	+	..	..	..	..	..	..	..	..
North Dakota	..	..	..	+	..	..	..	..	..	+
Ohio	..	..	..	+	..	..	..	..	..	+[4]
Oklahoma	+	..	..	..	..	+	..	..	..	..
Oregon	..	..	..	+	+	+[1]	..	..	+	..
Pennsylvania	..	..	+	..	..	..	..	..	+	..
Rhode Island	..	..	+	..	..	+[1]	..	..	+	..
South Carolina	..	+	..	..	..	+	..	..	..	..
South Dakota	..	..	+	..	..	..	..	..	..	..
Tennessee	..	+	..	..	..	+	..	..	..	..
Texas	+	..	..	..	..	..	..	..	..	..
Utah	..	+	..	..	..	+	+	..	..	..
Vermont	..	+	..	..	..	+	..	..	..	..
Virginia	..	..	..	+	..	+	..	..	..	..
Washington	..	..	..	+	..	+[1]	..	..	+	..
West Virginia	..	+	..	..	+	..	..	..	..	..
Wisconsin	..	..	+	..	..	+	..	..	..	..
Wyoming	+	..	..	..	..	+	..	..	..	..

1. Senior year in class A medical school in the United States.
2. Or one year in approved medical school in the United States.
3. Internship completed in foreign countries after 1934 not accepted.
4. If difficulty is encountered in evaluating diploma of a foreign medical school.

It is acknowledged that certain European medical schools set a lower academic standard than American medical schools and that evaluation of German medical schools since 1934 is difficult. It must be recalled, however, that the majority of émigré physicians were graduated prior to 1934.

The fact that foreign graduates show a higher proportion of failures in taking state board examinations than do the graduates of approved American medical schools [10] is not necessarily a proof of inferior training. The following circumstances must be considered:

1. Émigré physicians have often taken state board examinations soon after their arrival in America and without an

10. Medical Licensure Statistics for 1938, J. A. M. A. **112**: 1722 (April 29) 1939.

over 40 years of age, who nevertheless may be competent or distinguished physicians.

3. Whereas the majority of the candidates from American schools have only recently graduated, many of the émigré physicians completed their training more than ten years ago. It is patent that among any competitive group taking examinations the greatest measure of success is attained by those most recently associated with academic life, regardless of their citizenship status. How competently would any group of physicians in their 40's cope with the state board examinations were they to take them today?

Nevertheless, diverse state board examinations have not proved an insuperable barrier to graduates of foreign medical schools. Of the 118 graduates of foreign medical schools who took state board examinations in

fourteen restrictive states, eighty-five passed and only thirty-three failed.[11]

I do not know whether the failures were due to scholastic, language or personality difficulties, but the fact that more than two thirds of the entire group passed shows that there is no widespread scholastic incompetence.

Internship Requirement.—By law in three and by regulation of the state board in fifteen states, internship in a hospital approved by the American Medical Association is required of graduates of foreign medical schools. Further, the Council on Medical Education and Hospitals of the American Medical Association adopted the following resolution:[9]

That when suitable graduates of class A schools in the United States and Canada are not available, hospitals approved for intern training may accept graduates of European universities who have passed parts I and II of the examinations of the National Board of Medical Examiners.

No distinction has been made between recent graduates and those of long standing. Recent graduates of foreign medical schools should complete American internships, but men over 35 who find it difficult or impossible to secure intern placement should not be penalized needlessly when they can give adequate proof of having taught or practiced successfully for years. Since the major issue is one of medical competence, selection might be permissible in favor of distinguished scholars and scientists who could make a definite contribution to medicine. About 65 per cent of the émigré physicians are between 40 and 55 years of age, and only about 22 per cent are less than 35. Moreover, about 900 available internships in approved hospitals remain unfilled from American medical schools.[12]

TABLE 3.—*Results of State Board Examinations*

	Passed	Failed
California	16	2
Georgia	1	0
Idaho	1	5
Illinois	43	11
Indiana	2	0
Iowa	5	1
Maine	0	6
Missouri	2	0
Oregon	1	0
Pennsylvania	6	2
Texas	1	6
Virginia	2	0
Washington	2	0
West Virginia	3	0

IS THERE A PLACE FOR THE ÉMIGRÉ PHYSICIAN IN AMERICAN MEDICINE?

There are at least 2,000 opportunities for practice of which American physicians have not availed themselves.[13] That there is an urgent need for medical services in certain rural districts is evidenced by fifty-seven unsolicited requests for refugee physicians from thirty states in which such physicians cannot obtain licenses to practice.[14]

It has been the policy of the National Committee for Resettlement of Foreign Physicians to maintain the strictest selectivity in resettling the émigré physician. The local refugee committee makes a careful study of the community's medical needs, its willingness to accept the services of a foreigner and its capacity to maintain a physician. The committee then recommends an émigré whose medical training and personal attributes conform to the specific community needs. When necessary, his training is supplemented in some special field. In some instances the committee extends loans for resettlement expenses or for necessary equipment which the community is unable to supply.

Under these circumstances, the current fears regarding the fitness of foreign physicians[8] become groundless. The country should avail itself of the services of the Committee for Resettlement of Foreign Physicians of the National Refugee Service, Inc., which is prepared to act as a clearing house for information relating to foreign physicians who have registered there. Similar information may be obtained from the local branches in Boston, Chicago, San Francisco and elsewhere.

It has been the experience of this and other committees that émigré physicians are a distinct asset to the country when selected men are resettled in suitable places. I shall cite only four of the many cases of successful adjustment:

A General Practitioner Who Became a Research Parasitologist.—Dr. A., aged 45, who had been a physician in general practice in northern Germany, came to a Southern city in this country in 1936. The outlook for his starting a general practice was unfavorable; he therefore agreed to try a new field. Funds were collected for a fellowship in the department of tropical medicine of a Southern university and Dr. A. began to work. Since then he has shown remarkable adaptability in changing from general practice to experimental parasitology. His work is considered most satisfactory and the department is pleased with his progress, particularly with his researches on Trichomonas, oxyuriasis and the epidemiology of parasitic infestations in institutional groups.

The professor in charge of the department writes:

"It has been intensely interesting and gratifying to observe the progressive adaptation which Dr. A. has made. He came to us with practically no knowledge of English and essentially no specialized information in the field of medical parasitology and tropical medicine. His first year with us was devoted almost exclusively to learning the essentials in both of these necessary tools for work. Beginning with the second year he was of considerable help to us, and I have given him rather heavy responsibilities in the diagnostic laboratory. Within the past six months I have noted the marked advances, particularly in his ability to set down in relatively clear English the results of his studies. I am also finding him increasingly valuable as a consultant in investigational problems of the department."

An Obstetrician and Gynecologist in General Practice.—Dr. B. was born in Germany in 1900. After thorough training in obstetrics and gynecology he became clinical assistant first in a provincial midwife's institution and later in a hospital of the Jewish parish. Subsequently he established his own practice as a specialist in women's diseases and obstetrics.

After passing the New York state board examinations in 1938 Dr. B. and his wife, who is a trained masseuse, established themselves in an Eastern state. The community of 600 people in which they settled had been without a physician for three years and welcomed them heartily. A widower who had occupied a house on the main road turned it over to Dr. B. From the outset Dr. B. has been busy and able to support himself. He has been given the courtesy of the hospital in a nearby city but cannot operate until he becomes a member of the county medical society. He has been accepted by the community as one of its own and is gradually becoming a leader there.

A Clinician Who Received a Research Appointment to Continue His Previous Studies.—Dr. X, a well known German clinician in his late 40's, received an appointment as research associate in a large Midwestern academic institution. During the tenure of the stipend from the Emergency Committee in Aid of Displaced Foreign Medical Scientists he continued the clinical investigations in his special medical field which he had started abroad, and he was able to collect further important data. As a result of this endeavor he received an award from

11. These figures were compiled from THE JOURNAL throughout 1939.
12. Hospital Service, J. A. M. A. **112**: 922 (March 11) 1939.
13. Medical Economics **16**: 23-24 (March) 1939.
14. Alabama, Arizona, Arkansas, California, Georgia, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Minnesota, Missouri, Nebraska, Nevada, New Hampshire, New Mexico, North Carolina, North Dakota, Oklahoma, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Vermont, Virginia, West Virginia, Wisconsin.

an American medical society and has published a textbook. After the expiration of the grant, Dr. X was invited to continue his studies at the university.

A Medical Scientist Appointed to a University to Do Research.—Dr. Y, a German physiologist in his 30's, had done very specialized work and was offered the opportunity to continue his experiments at one of our Eastern universities. After the expiration of a grant from the Emergency Committee in Aid of Displaced Foreign Medical Scientists, a smaller Western college procured Dr. Y's services in order to have him continue his particular research project there. This type of work had previously not been within the scope of the college's activities.

SUMMARY AND RECOMMENDATIONS

It is neither the desire nor the purpose of the National Committee for Resettlement of Foreign Physicians to flood any state with an unlimited number of unselected physicians. It is, however, the belief of this committee that the present attitude of some medical men toward the émigré has been based on a complete misapprehension and needless panic in regard to the actual number of refugee physicians in America. Less than 1,500 are awaiting the opportunity to practice at the present time, and this total is not likely to be much augmented. There are at least as many communities throughout the country requiring medical services which are unavailable to them because American physicians have found these locations undesirable and because refugee physicians cannot obtain licenses to practice there. A logical and constructive solution of the problem could be effected through the cooperation of the state licensing boards in the proper redistribution of qualified émigré physicians. Such a step would be wholly consistent with the traditional American policy of assimilating bona fide immigrants and would therefore serve the best interests of the public.

With the foregoing facts in mind, the National Committee for Resettlement of Foreign Physicians feels that immediate action throughout the country is necessary. Toward this end we make the following suggestions:

1. That states which do not require citizenship by statute and which have a reciprocal licensure clause with any other state grant reciprocity to foreign physicians already licensed by examination in that state.

2. That the fifteen states requiring citizenship by regulation of the state board change this requirement to first papers, adding a clause to the effect that the license of a physician who does not become a citizen at the expiration of the period required by the state department may be revoked.

3. That all state boards of medical examiners accept the list of accredited foreign medical schools utilized by the National Board and thereafter evaluate foreign physicians on their own merits and by examination rather than reject them by ukase.

4. That states which do not have statutory requirements but desire further evidence of competence in addition to a written examination shall grant temporary licenses specifying localities and conditions of practice—the licenses to be made permanent when the physicians attain full citizenship.

5. That where statutes have been passed requiring citizenship or graduation from an American university consideration be given to the desirability of repealing such statutes and substituting for them suitable regulations by state boards of medical examiners.

6. That the Committee for Resettlement of Foreign Physicians of the National Refugee Service, Inc., be utilized as a clearing house for information in regard to available émigré physicians for specific placements.

THE PHARMACOPEIA AND THE PHYSICIAN

THE THERAPY OF FUSOSPIROCHETOSIS (VINCENT'S DISEASE)

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This is one of the second series of articles written by eminent authorities for the purpose of extending information concerning the official medicines. The twenty-four articles in this series have been planned and developed through the cooperation of the U. S. Pharmacopeial Committee of Revision and THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.—ED.

Fusospirochetosis or Vincent's infection—infection by a symbiotic group of anaerobic organisms commonly present about the teeth—has not yet received adequate attention from a major proportion of the medical profession. Gingivitis and pyorrhea are so common that they are usually neglected and an unwarranted, hopeless attitude concerning them is prevalent. Grades of infection in the throat and lungs, less severe than the usual textbook pictures, are relatively frequent, and they are commonly not correctly diagnosed. This is due to lack of familiarity with their possible clinical manifestations and the difficulty in demonstrating the smaller varieties of spirochetes. The most invasive of the spirochetes, as indicated by their occurrence alone in some pleural effusions and their predominance in the sputum in some cases of severe lung infections, are so small that they can be seen in the dark field with the usual 1.9 mm. objective and funnel stop only with the most perfect lighting.[1] The illumination will be impaired by the presence of too many cells or débris. In such instances a diagnosis can be made without a suitable silver stain only by familiarity with the fusiform bacilli and recognition of their predominance among the visible organisms in a smear stained with an aniline stain.

Much remains to be proved about the treatment of fusospirochetal infection. Numerous drugs have been reported to give favorable results. Unfortunately, carefully controlled studies have not been made in which alternate cases in which different treatments are given have been compared. It seems that a large number of drugs give effective chemotherapy, that the possibility of harm is an important consideration in the selection of a drug and that more attention should be paid to the general treatment of the patient, particularly nutrition and, when the gums are involved, dental measures.

In the treatment of Vincent's infection it is of primary importance to consider and correct, if possible, conditions which permit organisms which are ordinarily apparently harmless saprophytes to become invasive.

Concerning variations in the virulence of different strains or in the same strain at different times there is suggestive evidence that occasional cross infections occur which are not otherwise explained. This seems to justify infectious precautions which would not otherwise be indicated.

Other local lesions such as tuberculosis, neoplasms, syphilis or diphtheria may facilitate a superimposed Vincent's infection. It may be that only after treatment of that infection will the underlying lesion be recog-

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1. Personal observations. Vinzent, R., and Seguin, P.: Les spirochètes de l'appareil respiratoire, Bull. Acad. de méd. **121**: 407 (March 21) 1939.

nized. In the presence of a membranous exudate smears from which show a predominance of the fusospirochetal organisms, a culture for diphtheria bacilli should not be neglected.

Certain blood diseases such as acute leukemia, aleukemic leukemia, aplastic anemia, granulocytopenia and infectious mononucleosis are peculiarly apt to be complicated by Vincent's infection. Diabetic patients are also liable to such infection. Poisoning from heavy metals, benzene or its derivatives may be the antecedent to such infection. Acute infectious and chronic debilitating diseases predispose to Vincent's infection, probably in part because of an increased requirement for or a decreased intake of vitamins.

There is experimental and clinical evidence that a deficiency of any one of three vitamins may result in fusospirochetal infections. Vitamin C is incriminated by the finding of the mouth organisms invading the gingival tissues in scurvy,[2] by the correlation between gingivitis and capillary fragility,[3] by the finding of low blood levels of ascorbic acid in patients with gingivitis [4] and by the development not only of characteristic gingivitis but also of large foul ulcers following bites on the back, which do not otherwise occur, in guinea pigs deficient in vitamin C.[5] Wolbach and his associates [6] have shown that guinea pigs receiving inadequate amounts of vitamin C develop atrophy of the periodontal structures permitting loosening the teeth and pocket formation—favorable conditions for the growth of anaerobic organisms.

The evidence concerning the vitamin B complex is the occurrence of large numbers of the fusospirochetal organisms in pellagrous stomatitis [7] and experimental blacktongue,[8] and the marked improvement or cure in some cases of gingivitis or blacktongue following the administration of yeast concentrates.[9]

Recently Smith and his associates [10] have shown that the Underhill and Mendel type of blacktongue (produced by a diet abundant in the vitamin B complex but deficient in vitamin A) is similar to the Goldberger and Wheeler type because both present fusospirochetal stomatitis. The former type could be prevented by supplements of cod liver oil but not by ascorbic acid and viosterol.

Until further evidence is available concerning the significance of lesser deficiencies of these vitamins in fusospirochetosis, it seems wise to give supplements of them amounting to at least a daily maintenance dose—more if the previous diet has been inadequate [11] or if the patient does not take a fully adequate diet. Of the vitamin B complex, nicotinic acid seems to be the most important factor because of its effectiveness in cases of pellagrous stomatitis [12] and in those of experimental blacktongue.[13] It may be desirable to give the whole complex derived from natural sources in doses equivalent to from 15 to 30 Gm. of yeast daily. Natural sources of the complex contain relatively small amounts of nicotinic acid.[14] This may be started with from 40 to 60 mg. six to eight times a day. With such doses, in only occasional cases will cutaneous flushing and tingling occur before approaching saturation.

In the case of vitamin C, low blood levels are surprisingly frequent; there is evidence that occasionally deficiency may occur despite a normal intake and that oral doses may affect but little the level of ascorbic acid in the blood.[15] Consequently it seems wise in critical situations to act on the assumption of a deficiency, if it cannot be disproved, and administer intravenously 2.5 Gm. of ascorbic acid in 0.5 Gm. doses during the first twenty-four to thirty-six hours. Because of the current discussion as to whether ascorbic acid is a complete antiscorbutic vitamin,[16] and the lack of knowledge as to the relationship of the possible second antiscorbutic vitamin to fusospirochetosis, a large intake of vitamin C from natural sources is also advised. Parenteral chemotherapy, particularly with arsphenamine and allied compounds, requires consideration. Both good and bad results have been reported.[17] My observations have been chiefly in cases of pulmonary infection. The disappearance of spirochetes from the sputum and the clinical course has not seemed different in those treated with neoarsphenamine from those not so treated. Analysis of the favorable case reports [18] shows that fever usually has not subsided promptly after the injection of arsenicals and that when sputum examinations following such treatment have been reported the organisms were still present. It seems apparent that arsphenamine is not a specific remedy for fusospirochetosis to the degree that it is for syphilis or that quinine is for malaria.

It is, however, difficult to overlook the observations of Smith [19] that following the use of sulfarsphenamine

2. Hess, A. F.: Scurvy, Past and Present, Philadelphia, J. B. Lippincott Company, 1920, p. 100.

3. Nordenmark, Wolmar: Simultaneous Investigations into Gingivitis and Strength of Capillaries in Children: Results of Treatment of Subnormal Capillary Strength with Ascorbic Acid, Skandinav. Arch. f. Physiol. **70:** 186, 1934; Nord. med. tidskr. **8:** 1490 (Nov. 3) 1934.

4. Weisberger, David; Young, A. P., and Morse, F. W., Jr.: Study of Ascorbic Acid Blood Levels in Dental Patients, J. Dent. Research **17:** 101-105 (April) 1938.

5. Smith, D. T.: Oral Spirochetes and Related Organisms in Fusospirochetal Diseases, Baltimore, Williams & Wilkins Company, 1932, pp. 71, 187.

6. Boyle, P. E.; Bessey, O. A., and Wolbach, S. B.: Experimental Alveolar Bone Atrophy Produced by Ascorbic Acid Deficiency and Its Relation to Pyorrhea Alveolaris, Proc. Soc. Exper. Biol. & Med. **36:** 733-735 (June 3) 1937.

7. Spies, T. D.: Treatment of Pellagra, J. A. M. A. **104:** 1377-1380 (April 20) 1935. Blankenhorn, M. A., and Spies, T. D.: Oral Complications of Chronic Alcoholism: Significance, Recognition and Treatment, J. A. M. A. **107:** 641-642 (Aug. 29) 1936.

8. Miller, D. K., and Rhoads, C. P.: Experimental Production in Dogs of Acute Stomatitis, Associated with Leukopenia and Maturation Defect of Myeloid Elements of Bone Marrow, J. Exper. Med. **61:** 173-182 (Feb.) 1935. Smith, Persons and Harvey.[10]

9. Gerstenberger, H. J.: Etiology and Treatment of Herpetic (Aphthous and Aphtho-Ulcerative) Stomatitis and Herpes Labialis, Am. J. Dis. Child. **26:** 309-328 (Oct.) 1923. Sebrell, W. H.; Onstott, R. H., and Hunt, D. J.: Treatment of Blacktongue with Preparation Containing "Filtrate Factor," and Evidence of Riboflavin Deficiency in Dogs, Pub. Health Rep. **52:** 427-433 (April 9) 1937. Blankenhorn and Spies.[7]

10. Smith, D. T.; Persons, E. L., and Harvey, H. I.: On Identity of Goldberger and Underhill Types of Canine Blacktongue: Secondary Fusospirochetal Infection in Each, J. Nutrition **14:** 373-381 (Oct.) 1937.

11. The vitamin deficiencies were well summarized in a series of articles in THE JOURNAL last year. Tables of food values for vitamins can be found in the U. S. Department of Agriculture Bulletin, miscellaneous publications 275.

12. Spies, T. D.; Cooper, Clark, and Blankenhorn, M. A.: Use of Nicotinic Acid in Treatment of Pellagra, J. A. M. A. **110:** 622-627 (Feb. 26) 1938.

13. Elvehjem, C. A.; Madden, R. J.; Strong, F. M., and Wooley, D. W.: Relation of Nicotinic Acid and Nicotinic Acid Amide to Canine Blacktongue, J. Am. Chem. Soc. **59:** 1767, 1937.

14. D. Melnick in this laboratory has found about 0.5 mg. of nicotinic acid per gram of yeast and 1.2 mg. per gram of a good liver extract.

15. Hagmann, E. A.: Active Scurvy in Infant Receiving Orange Juice, J. Pediat. **11:** 480 (Oct.) 1937. Kendall, A. I., and Chinn, H.: Decomposition of Ascorbic Acid by Certain Bacteria: Studies in Bacterial Metabolism, J. Infect. Dis. **62:** 330-336 (May-June) 1938. Personal observations, to be published.

16. Rusznyák, S., and Szent-Györgyi, Albert: Vitamin P: Flavonols as Vitamins, Nature, London **138:** 27 (July 4) 1936. Elmby, A., and Warburg, E.: Inadequacy of Synthetic Ascorbic Acid as Antiscorbutic Agent, Lancet **2:** 1363-1365 (Dec. 11) 1937. Birch, T. W.; Harris, L. J., and Ray, S. N.: Hexuronic (Ascorbic) Acid as the Antiscorbutic Factor and Its Chemical Determination, Nature, London **131:** 273 (Feb. 15) 1933. Zilva, S. S.: Vitamin P, Biochem. J. **31:** 915 (June) 1488 (Sept.) 1937; Nature, London **140:** 588 (Oct. 2) 1937.

17. Smith, D. T.: Should Fusospirochetal Infections Be Treated with Arsenicals? Report of Cases, Arch. Otolaryng. **18:** 760-769 (Dec.) 1933. Miller, J. A.: Discussion of Symposium on Bronchiectasis and Lung Abscess, Nat. Tuberc. A. Tr., 1931, p. 91. Black, W. C.: Acute Infectious Gingivostomatitis (Vincent's Stomatitis), Am. J. Dis. Child. **56:** 126 (July) 1938. Lichtenberg, H. H.; Werner, Marie, and Lueck, Esther V.: The Pathogenicity of the Fusiform Bacillus and Spirillum of Plaut-Vincent, J. A. M. A. **100:** 707 (March 11) 1933. Kline and Berger.[43] Spector.[21] Enescu and Bercovici.[18]

18. Enescu, I., and Bercovici, H.: Remarques sur onze observations de spirochetose pulmonaire, Ann. de méd. **29:** 423-435 (April) 1931. Kline and Berger.[43]

19. Smith, D. T.: Relation of Vincent's Angina to Fusospirochetal Disease of the Lungs, J. A. M. A. **94:** 23 (Jan. 4) 1930; footnote 20.

from one patient sputum and pus from experimental groin abscesses were no longer infective. Possibly part of the answer lies in the observation of Smith [20] that intravenous use of arsphenamine did not produce good results in chronic trench mouth until it was supplemented by dietary measures and thorough dental treatment.

As the matter now stands, it appears that the injection of arsenicals in instances of lesions not accessible to local treatment may be advised, provided it is not relied on to the neglect of other measures. With accessible lesions the hazard of toxicity is not warranted unless the lesion is exceptionally severe and invasive. It has been suggested that large doses of arsenicals may be harmful.[21] For an adult weighing 150 pounds (68 Kg.), the following dosage of neoarsphenamine is suggested: 0.3 Gm. the first day, 0.45 Gm. the third and sixth days and a repetition of this dose at weekly intervals if necessary. Doses of approximately half these amounts have been suggested as safer. Acetarsone (stovarsol) given orally has been reported to give good results.[22] If this is confirmed, it might replace the parenteral arsenicals.

Good results have been reported following the intravenous injection of antimony and potassium tartrate [23] and the intramuscular injection of fuadin,[24] an antimony compound developed for treatment of bilharziasis. The toxicity of these drugs is such that they would be recommended only in most unusual circumstances.[25] Death occurs in sudden collapse without the warning usually obtainable in arsphenamine poisoning.

Oral fusospirochetosis presents problems in prophylaxis and treatment for both physician and dentist. These are important not only intrinsically but also for the prevention of secondary infections elsewhere. Most of my patients with pulmonary fusospirochetosis have had more or less of a gingivitis.

The constitutional and nutritional factors involved in susceptibility to infection have been discussed. Local conditions favoring anaerobic infection are gingival crevices, flaps over partially erupted third molars, subgingival and supragingival calculus, overhanging crowns or fillings, malocclusion permitting impaction of food or loosening of teeth, caries and detritus. Smoking is said to lower local resistance.

There are various classifications of gingival and periodontal disease. For the purposes of this paper they may be simplified into pyorrhoea alveolaris and gingivitis. It is probable that they all have a similar primary etiology and represent different grades of activity of infection and secondary changes. The treatment is the same except as it is modified by differences in activity of infection and extent of pathologic changes. If there has been extensive resorption of the gums and alveolar processes, dental prophylactic treatment will probably be inadequate and periapical infection will probably require extraction after any nutritional deficiency or hemorrhagic tendency has been corrected. The buccal mucosa and tongue may also be infected.

Peridontal treatment need not be discussed in detail. Its importance should be emphasized. No chemotherapy can be expected to give a permanent cure until local mechanical conditions such as those previously mentioned are corrected. Regarding the time for periodontal treatment, generally it is advisable first to attain an optimum saturation with the vitamins concerned and to relieve the acute manifestations of infection. The probability of an acute exacerbation following instrumentation will be thereby minimized.

Not all of the many drugs used for local chemotherapy can be discussed. They include numerous antiseptics, sodium perborate and hydrogen peroxide. The latter two are noxius to anaerobic organisms because of the nascent oxygen liberated from them.

Arsenical preparations are considered to have a specific action on the fusospirochetal organisms. Arsphenamine or a solution of it was used extensively for "trench mouth" during the World War. Ten per cent neoarsphenamine in glycerin has become a favored application. Smith [26] preferred solution of potassium arsenite (Fowler's solution) because it is cheaper and, he believed, more effective. At the dental clinic of this university a 1 per cent solution of acriflavine is commonly used in cases that are not too severe or resistant. It is introduced into the subgingival areas by means of a blunt pointed syringe.[27]

Various bismuth salts have been used both for local application and for intramuscular injection. These require further study. Mangabeira-Albernaz [28] reported a 30 per cent emulsion of potassium and sodium bismuth tartrate [29] to be effective in sixty-four cases of phagedenic ulcer and four cases of oral fusospirochetosis.

Albray [30] summarized his objections to various other forms of local application on the grounds of inefficacy, staining of cracks in the dental enamel and of fillings or undesirable caustic effects.

Sodium perborate was also used extensively during the World War and later was popularized by Bloodgood.[31] Objections have been raised against its use as a dentifrice or for uncontrolled treatment because of the chemical burns which it may produce. These are due largely to the sodium hydroxide originally in the powder or produced by disintegration reactions when it is dissolved.[32] A neutral product can be obtained by the admixture of an acid phosphate.[33] A more serious objection, which apparently has not been considered, would seem to be the instability of sodium perborate with the consequent uncertainty of its efficacy as it is marketed. Manchey and Lee [33] report the loss of 70 per cent of the available oxygen in twenty-two days when a specimen was kept at a humidity of 88.5 per cent and a temperature of 100 F.

20. Smith, D. T.: Should Fusospirochetal Infections Be Treated with Arsenicals? Report of Cases, Arch. Otolaryng. **18:** 760-769 (Dec.) 1933.

21. Spector, H. I.: Treatment of Bronchopulmonary Suppuration of Fusospirochetal Etiology with Small Doses of Neosalvarsan, J. Lab. & Clin. Med. **19:** 66-67 (Oct.) 1933. Bettman, R. B.: Therapy of Nontuberculous Lung Abscess, J. A. M. A. **106:** 1728-1731 (May 16) 1936.

22. Maxwell, C. H., Jr.: Treatment of Vincent's Angina with Acetarsone, New York State J. Med. **36:** 874-878 (June 1) 1936.

23. Driscoll, T. J.: Treatment of Vincent's Angina, Virginia M. Monthly **51:** 233 (June) 1924. Hillsman, J. A., and Driscoll, T. L.: Fusospirillary Infection Which Developed During Active Arsphenamine Treatment, ibid. **52:** 312-313 (Aug.) 1925.

24. Ross, T. W.: Vincent's Angina and Tartar Emetic, Northwest Med. **37:** 49 (Feb.) 1938.

25. Khalil, M., and Betache, M. H.: Treatment of Bilharziasis with New Compound "Fuadin": Report of 2,041 Cases, Lancet **1:** 234-235 (Feb. 1) 1930. Khalil Bey, M.: Excretion of Drugs; Its Influence on Therapeutic Results, with Special Reference to Antimony Treatment of Schistosomiasis, Lancet **2:** 132 (July 18) 1936.

26. Smith: Oral Spirochetes and Related Organisms in Fusospirochetal Disease, p. 62.

27. Hard, D. G.: Vincent's Infection from a Public Health Standpoint, J. Michigan State Dent. Soc. **19:** 60 (March) 1937.

28. Mangabeira-Albernaz, P.: Etiology and Etiological Treatment of "Plaut-Vincent's Angina," Laryngoscope **38:** 1-15 (Jan.) 1929.

29. The French preparation trepol used was shown by L. E. Warren of the chemical laboratory of the American Medical Association in 1925 to be not a complex potassium sodium tartrate but "virtually a basic bismuth tartrate containing small amounts of potassium and sodium salts as impurities (J. A. M. A. **84:** 1067 [April 4] 1925).

30. Albray, R. A.: Vincent's Infection of Mouth, Laryngoscope **38:** 250-263 (April) 1928.

31. Bloodgood, J. C.: Oral Lesions Due to Vincent's Angina: What Every Physician and Dentist Should Know About Its Recognition and Treatment, J. A. M. A. **88:** 1142-1145 (April 9) 1927.

32. Gordon, S. M.: Sodium Perborate: Limitations of Its Use, J. Am. Dent. A. **22:** 1761-1764 (Oct.) 1935.

33. Manchey, L. L., and Lee, S.: Chemical and Clinical Aspects of Sodium Perborate Therapy, J. Am. Pharm. A. **26:** 890-896 (Oct.) 1937.

Hydrogen peroxide is a more dependable oxygen liberator and has been found very useful for supplementary home treatment. It has been used undiluted without apparent harm. I prefer to have it diluted with an equal volume of hot water to produce a temperature of 110 F. Its chemical activity is enhanced so by the heat that burns with vesiculation may be produced. If signs or symptoms of irritation appear a more dilute or cooler solution of hydrogen peroxide or a different solution may be used. Potassium permanganate 1 : 1,000 is in common use.

The following plan of local treatment is suggested: The patient should be seen one or more times a day while the infection is acute, that its progress may be observed and local applications made. The patient should use one of the mouth washes every two hours while awake, swishing it thoroughly between the teeth for two or three minutes. When the acuteness of the infection has subsided, the indicated periodontal and dental work may be started, mouth washes being continued and a local application being made after each instrumentation. This treatment should be carefully done and must be thorough to secure a permanent cure. As improvement occurs, the mouth washes may be gradually made less frequent but should be continued three times a day for weeks after apparent healing.

Local chemotherapy for fusospirochetal infections elsewhere may follow a similar plan, adapted to technical requirements.

Vincent's angina occurs much more frequently than it is diagnosed. As on the gums, milder infections than those manifested by ulceration or membrane may occur.[34] Contrary to some opinions, pronounced diffuse redness may occur. Any throat infection which begins unilaterally, which lasts more than four days, which has deep redness without a considerable leukocytosis (a moderate leukocytosis may occur in Vincent's infection although leukopenia is common) or which is associated with gingivitis is to be suspected.

Local applications are particularly important in Vincent's angina because of common difficulty with self treatment. The x-ray studies of Snow and Stern[35] and of Haase[36] with patients gargling a thin barium sulfate mixture did not show entrance of the barium into the pharynx. Gravity irrigation with the can 18 inches above the mouth was found to be effective. The patient's head should be tipped back and a little to one side, the pharynx should be held wide open while respiration is temporarily suspended and the overflow should be caught in a kidney basin held against the side of the face.

Vincent's infection of the nose, conjunctiva and middle ear is rare. In the latter it is apparently a secondary infection causing foul and occasionally bloody discharge in acute or chronic otitis media. For it Smith[37] advised both local and general treatment with arsenicals.

Although the fusospirochetal organisms are commonly found in the secretions beneath the prepuce and about the clitoris,[38] genital lesions are apparently rare among persons with good nutrition and good personal hygiene. They were comparatively frequent in the World War[39] and numbered thirty-seven in a series of 622 cases of venereal disease at the Charity Hospital, New Orleans.[40] The same principles of treatment apply to these lesions as to other accessible lesions. The chief difference in opinion that has been expressed is with regard to a dorsal slit of the prepuce.[41] This may frequently be necessary to make the lesions accessible.

The most commonly serious fusospirochetal infections are pulmonary. Lung abscesses and bronchiectasis have been most frequently associated with these organisms. Lung abscesses are usually the result of necrosis in a preexisting pneumonitis. I have called attention to the considerable number of cases of pneumonia without abscess formation the fusospirochetal etiology of which may be recognized.[42] The importance of this recognition lies in the fact that a good immunity is not developed as readily as in other pneumonias. This gives a tendency to chronicity and to exacerbations. Convalescence should be managed with unusual conservatism. Exacerbation with abscess formation was observed in one case when bed rest had been continued for one month after the temperature remained normal and until the x-ray densities had cleared to what was considered to be a small residual fibrosis. In these milder infections the sputum may never be observed to be foul or it may be so for a few days only.

Aside from foul sputum, the manifestations which arouse suspicion of fusospirochetal etiology of pneumonia are a preceding chronic or recurrent pharyngitis, an associated gingivitis, postoperative occurrence, particularly more than forty-eight hours after operation and in a patient with gingivitis; acute development of symptoms after a prodromal period of cough and malaise without coryza; grossly bloody sputum later than expected in the course of pneumococcic pneumonia, or brown staining of portions of sputum with old blood and an unusually large volume of sputum. The latter is not essential. A few patients have had only a few mouthfuls of deeply blood-stained sputum for many days or for a few weeks.

Again the importance of prophylaxis is emphasized, particularly preoperative attention to oral hygiene and nutrition. Kline and Berger reported an incidence of 0.17 per cent postoperative pulmonary complications among ward patients during a four year period in which they were receiving preoperative oral therapy, compared with an incidence of 0.68 per cent among private patients who were not so treated.[43] Measures to prevent postoperative retention of secretions in the lung and consequent pulmonary complications have been discussed by Haight.[44]

The principles of treatment of fusospirochetal pneumonitis are largely the same whether or not an abscess has developed. The majority of cases that are treated early will heal without operation. An optimal storage of the vitamins discussed should be attained promptly and maintained.

34. Personal observations, to be published.
35. Snow, William, and Stern, J. E.: Gargling and Throat Irrigation, J. A. M. A. **103:** 831 (Sept. 15) 1934.
36. Haase, W.: Ueber das Gurgeln, Klin. Wchnschr. **14:** 1244-1245 (Aug. 31) 1935.
37. Smith (footnote 5, p. 95).
38. Brams, Julius; Pilot, Isadore, and Davis, D. J.: Studies of Fusiform Bacilli and Spirochetes: Their Occurrence in Normal Preputial Secretions and in Erosive and Gangrenous Balanitis, J. Infect. Dis. **32:** 158 (Feb.) 1923. Pilot, Isadore, and Kanter, A. E.: Studies in Fusiform Bacilli and Spirochetes: Occurrence in Normal Women About Clitoris and Significance in Certain Genital Infections, J. Infect. Dis. **32:** 204-207 (March) 1923.
39. Reasoner, M. A.: Ulcerative and Gangrenous Balanitis, New York State J. Med. **27:** 767-773 (July 15) 1927.
40. von Haam, Emmerich: Venereal Fusospirochetosis, Am. J. Trop. Med. **18:** 595 (Sept.) 1938.
41. Brams, Julius, and Pilot, Isadore: Study of Erosive and Gangrenous Balanitis, with Special Reference to Role of Fusiform Bacilli and Spirochetes, Arch. Dermat. & Syph. **7:** 429 (April) 1923. Reasoner.[39]
42. Field, Henry, Jr.: Fusospirochetal Pneumonia, J. Clin. Investigation **13:** 707 (July) 1934. Peirce, C. B., and Field, Henry, Jr.: Fusospirochetal Pneumonia, Am. J. Roentgenol. **33:** 451 (April) 1935.
43. Kline, B. S., and Berger, S. S.: Pulmonary Abscess and Pulmonary Gangrene; Analysis of Ninety Cases Observed in Ten Years, Arch. Int. Med. **56:** 753-772 (Oct.) 1935.
44. Haight, Cameron: Intratracheal Suction in the Management of Postoperative Pulmonary Complications, Ann. Surg. **107:** 218 (Feb.) 1938.

An early bronchoscopy should be done in search of a foreign body or neoplasm which may have been a precursor of the infection and to make sure that granulation tissue is not obstructing bronchial drainage. I am not convinced of the value of repeated bronchoscopies except when an unfavorable course causes a recurrence of the original indications.

On the basis of present information, the use of neoarsphenamine, as previously described, is advised as soon as other therapeutic requirements have been met.

Cough is commonly productive and if so should not be unnecessarily suppressed by narcotics. When tracheitis produces paroxysms of unproductive cough it should be treated with steam inhalations, a teaspoonful of compound tincture of benzoin or a few crystals of menthol being added to the kettle. If necessary, narcotics should be used conservatively. If reasonable relief from pleural pain is not obtained by strapping the chest, local heat and analgesics, narcotics should be given only in minimal doses. After initial relief, doses of from 6 to 8 mg. (one-tenth to one-eighth grain) of morphine sulfate, repeated as necessary, are preferable to periodic respiratory depression from larger doses given less frequently.

In cases of lung abscess, postural drainage should be tried from four to six times a day, or even more frequently when the results warrant, if the condition of the patient permits. Some experimenting may be required to determine the most favorable position. Sometimes, when the abscess is basilar, simply raising the foot of the bed with the patient lying in a selected position may be adequate and least fatiguing. An inverted and padded chair placed against the side of the bed will minimize the effort required of the patient by the head down position.

In any case, changes of posture every hour will facilitate expectoration and diminish the probability of the devolpment of atelectasis. It appears that atelectasis is more apt to develop in fusospirochetal pneumonitis than in other pneumonias. It may be the result of obstruction of the smaller bronchi with exudate and secretion rather than obstruction of major bronchi.[45]

Other therapeutic indications for general care are similar to those for any type of pneumonia. Bed rest should be continued for at least three weeks after the temperature has remained continuously normal and for one or two weeks after there has been complete resolution demonstrated by x-ray examination.

It is generally agreed that pneumothorax is not indicated in the treatment of lung abscess because of the danger of empyema. Also it seems irrational to promote atelectasis.

I believe that phrenic nerve interruption is usually contraindicated. It would seem that the benefit of relative rest and relaxation of intrapleural tension is overbalanced by inefficiency of cough, owing to failure of inspiratory descent of the diaphragm. Also there is the possibility of bronchial torsion interfering with drainage and favoring atelectasis.

The decision as to when surgical drainage is indicated for fusospirochetal lung abscess is difficult. It has been generally agreed that operation should not be done while an acute pneumonitis is still present, because of the risk at that time and because of the probability of cure with conservative treatment. When an abscess becomes chronic, with a fibrous wall, it is not apt to heal without an operation, although it may possibly become asymptomatic. I have seen a fusospirochetal pneumonitis, without evidence of excavation, heal after a fluctuating course of nine months' duration.

It is a question of balancing the probability of a serious extension occurring during and that of a serious residue such as bronchiectasis occurring after conservative treatment against the probability of those events occurring after operation, in addition to the other hazards introduced by the operation. I am inclined to follow conservative treatment for at least two months. There will be varying factors in different cases which will influence the decision. An important consideration is whether adequate bronchial drainage of the abscess can be secured.

45. Warner, W. P., and Graham, Duncan: Lobar Atelectasis as Cause of Triangular Roentgen Shadows in Bronchiectasis, Arch. Int. Med. **52**: 888-904 (Dec.) 1933. Peirce and Field [42] (case viii).

Council on Pharmacy and Chemistry

REPORTS OF THE COUNCIL

IN CONSIDERING THE ACCEPTANCE OF A SUBMITTED OXYGEN-CARBON DIOXIDE MIXTURE, THE COUNCIL ASKED THE ASSISTANCE OF DR. ALVAN L. BARACH, ASSISTANT PROFESSOR OF CLINICAL MEDICINE AT COLUMBIA UNIVERSITY COLLEGE OF PHYSICIANS AND SURGEONS, NEW YORK. DR. BARACH'S REPORT INVOLVED NOT ONLY THE SUBMITTED PREPARATION BUT ALSO A GENERAL CONSIDERATION OF THE USE OF OXYGEN-CARBON DIOXIDE MIXTURES. IN ACCEPTING THE SUBMITTED PREPARATION (DESCRIPTION OF WHICH WAS PUBLISHED IN THE JOURNAL, SEPT. 9, 1939, PAGE 1033) THE COUNCIL ADOPTED DR. BARACH'S REPORT AND VOTED THAT IT BE AUTHORIZED FOR PUBLICATION IN FULL AND THAT THE APPRECIATION OF THE COUNCIL BE EXPRESSED TO DR. BARACH FOR HIS REPORT.

PAUL NICHOLAS LEECH, Secretary.

OXYGEN-CARBON DIOXIDE MIXTURES

The recently accepted gas mixture Oxygen-Carbon Dioxide Mixture (the Denver Oxygen Company), claiming to be 90 per cent oxygen and 10 per cent carbon dioxide, fulfils this specification satisfactorily. The oxygen concentration tested 90.25 per cent plus or minus 0.2 per cent, the carbon dioxide concentration 9.75 per cent plus or minus 0.2 per cent.

The uses to which carbon dioxide-oxygen mixtures may be put are suggested in letters submitted by the company; these may be summarized by listing the following conditions: asphyxia from carbon monoxide poisoning, deetherization, morphine narcosis, alcoholic intoxication, the prevention and treatment of postoperative pulmonary atelectasis and resuscitation after respiratory failure from any cause.

PHYSIOLOGIC CONSIDERATIONS

The submitted gas mixture itself was found satisfactory. The use of carbon dioxide therapy has aroused considerable controversy for almost two decades both from the point of view of the underlying physiologic function and from the point of view of the results obtained from its employment. A comprehensive review of the extensive literature available is out of place in this presentation; however, the importance of the subject warrants a consideration of the physiologic basis on which carbon dioxide inhalations depend, since this is the first time that an oxygen-carbon dioxide mixture has been considered by the Council.

Although Paul Bert [1] originally showed that mountain sickness was due to the decreased partial pressure of oxygen in the thinner atmosphere, Mosso [2] took the position that the symptoms experienced were caused by a loss of carbon dioxide from the blood resulting directly from the diminished air pressure, a physiologic state of affairs which he called "acapnia." It was soon shown that the decreased carbon dioxide content of the blood was due to the increased breathing which oxygen want engendered. The significance of carbon dioxide in the regulation

1. Bert, Paul: La pression barometrique, Paris, 1898.
2. Mosso, A.: Life of Man on the High Alps, translated from the Italian, London, 1898.

of respiration became clear with the work of Haldane and his associates,[3] who showed that the volume of breathing of normal men was controlled in a precise way by the concentration of oxygen in the alveolar air. An increase in alveolar carbon dioxide was consistently accompanied by an augmentation of breathing proportional to the rise in carbon dioxide percentage in the alveolar air; oxygen want was said to stimulate breathing by heightening the sensitivity of the respiratory center to carbon dioxide.

The decrease in the blood content of carbon dioxide which occurs at high altitudes as a result of oxygen deficiency initiating increased breathing was thought by Yandell Henderson[4] to indicate a pathophysiologic state (still termed "acapnia") which occurred in various types of clinical illness characterized by dyspnea. In numerous studies Henderson and Haggard[5] developed the theory that loss of carbon dioxide from the blood was a serious and menacing condition which should be treated by inhaling carbon dioxide in increased concentrations, such as 5, 7 or 10 per cent, generally with the diluent gas oxygen. After it was discovered that a lowering of carbon dioxide in the blood was followed by an almost proportional decrease in the alkaline bicarbonates in the blood, importance was attached to the loss of bicarbonates, which was called "acarbia"; the term "acapnia" was retained to signify carbon dioxide deficiency.

The conditions in which undue loss of carbon dioxide was said to occur were those in which increased breathing takes place, such as oxygen want, the induction phase of anesthesia, and states of mental excitement. Henderson and Haggard[6] considered that oxygen want was the first stage of asphyxia; this was followed by increased breathing which lowered the carbon dioxide content of the blood, the second stage, and finally by a compensatory decrease in the bicarbonates, which were said to migrate to the tissues, the third stage. It was shown that administration of a mixture containing from 5 to 10 per cent of carbon dioxide resulted in an increase in the bicarbonate content of the blood. Clinical benefit was also observed as a result of this procedure in animals exposed to narcotization and shock, such as stimulation of breathing and improved tonus of the body musculature.

However, grave doubts have been expressed as to the existence of carbon dioxide deficiency in most of the conditions in which it has been postulated. Concerning the recommendation of the inhalation of from 5 to 10 per cent carbon dioxide mixtures to patients who were thought to overventilate as a result of anesthesia, Peters and Van Slyke[7] summarize their views as follows: "General anesthesia induced by ether and chloroform is attended by reduction of the bicarbonates of the blood and serum. Henderson and Haggard believed that the bicarbonate fall was a secondary effect of primary carbon dioxide deficiency brought about by overventilation during the excitement stage of anesthesia. It is now realized, however, that such a hypothesis is untenable. Van Slyke, Austin and Cullen, Kornblum and Robinson have shown that both bicarbonate and p_H fall early in the development of the acidosis, an indication that bicarbonate is displaced from combination with base by other acids." Waters,[8] reviewing more than twenty years' experience as an anesthetist, says: "Rarely in modern medical practice does one encounter a patient depleted of carbon dioxide because he has breathed too deeply. Under no condition of abnormal physiology does nature so quickly restore herself as in the elimination of carbon dioxide." Campbell[9] has demonstrated experimentally in dogs that a rapid return of carbon dioxide to the blood takes place after severe hyperventilation has been induced. Conversely, retention of carbon dioxide in the blood of from 50 to 100 per cent above the normal value takes place spontaneously in dyspneic patients treated by continuous inhalation of oxygen-enriched atmospheres, as shown by Barach and Richards,[10] who studied the effect of oxygen on the increased pulmonary ventilation of congestive heart failure and pulmonary emphysema. The rise in carbon dioxide content takes place promptly as the pulmonary ventilation diminishes.

CLINICAL APPLICATION

Despite the lack of confirmation of the original concepts of carbon dioxide deficiency, the inhalation of carbon dioxide has other effects which are physiologically significant, such as increased pulmonary ventilation and increased muscle tonus (Henderson[4]). After operations the anesthetic gases are more swiftly eliminated by increasing the volume of breathing. Mucous plugs may be eliminated more easily by stretching the walls of the tracheobronchial tree. In respiratory depression the inhalation of mixtures containing increased percentages of carbon dioxide and oxygen stimulate the respiratory center and overcome anoxemia more quickly than oxygen alone.

The final word on the use of carbon dioxide after operations cannot be definitely stated at this time. Other procedures are being considered to remove the anesthetic gases. Since helium has a high rate of effusion and diffusion, Barach[11] proposed it as a vehicle for oxygen in conditions of respiratory obstruction; Jones and Burford[12] have employed helium-oxygen mixtures during anesthesia as a preventive of postoperative pulmonary atelectasis not only on the theory that it will penetrate areas of the lung inadequately ventilated and wash out anesthetic gases but especially with the concept that helium is a relatively insoluble gas and would therefore prevent collapse of alveoli after absorption of oxygen and the anesthetic gas.

The most secure indication for the inhalation of oxygen-carbon dioxide mixtures appears to be respiratory depression. In carbon monoxide poisoning, drowning, electric shock, morphine and alcohol intoxication, the respiration is depressed. Henderson and Haggard[13] published their first paper on the inhalation of 10 per cent carbon dioxide and 90 per cent oxygen in 1920, and later a method designed for the inhalation of various carbon dioxide and oxygen mixtures, the most generally used being 5 and 7 per cent carbon dioxide, the remainder oxygen. Emergency rescue crews trained to give these mixtures for from fifteen to thirty minutes were organized, with the result that there has been a progressive drop in the mortality rate from carbon monoxide poisoning in New York City from the years 1926 to 1933. Henderson and Haggard showed that inhalation of carbon dioxide and oxygen produced a swifter elimination of carbon monoxide from the blood than inhalation of air or oxygen. Sayers and Yant[14] adhere to the view that 100 per cent oxygen is as efficacious in preventing after-symptoms as the carbon dioxide and oxygen mixtures. The fact that carbon dioxide has a specific effect in releasing carbon monoxide from hemoglobin, shown in 1912 by Haldane[15] and recently more clearly by Stadie and Martin,[16] adds confirming and convincing evidence

3. Haldane, J. S.; Priestley, J. G., and Douglas, C. G., in Haldane, J. S., and Priestley, J. G.: Respiration, new ed., London, Oxford University Press, 1935.

4. Henderson, Yandell: Adventures in Respiration, Baltimore, Williams & Wilkins Company, 1938.

5. Henderson, Yandell, and Haggard, H. W.: Respiratory Regulation of the CO_2 Capacity of the Blood, High Levels of CO_2 and Alkali, J. Biol. Chem. **33**: 333 (Feb.) 1918; Hematorespiratory Functions: The Reversible Alterations of the H_2CO_3:$NaHCO_3$ Equilibrium in Blood and Plasma Under Variations in CO_2 Tension and Their Mechanism, J. Biol. Chem. **45**: 189 (Dec.) 1920.

6. Henderson.[4] Henderson and Haggard.[5]

7. Peters, J. P., and Van Slyke, D. D.: Quantitative Clinical Chemistry, Baltimore, Williams & Wilkins Company, 1931.

8. Waters, R. M.: Toxic Effects of Carbon Dioxide, New Orleans M. & S. J. **90**: 219 (Oct.) 1937.

9. Campbell, J. A.: Tissue Oxygen-Tension with Especial Reference to Tetany and Convulsions, J. Physiol. **60**: 347 (Oct. 25) 1925.

10. Barach, A. L., and Richards, D. W., Jr.: Effects of Treatment with Oxygen in Cardiac Failure, Arch. Int. Med. **48**: 325 (Aug.) 1931. Richards, D. W., Jr., and Barach, A. L.: Prolonged Residence in High Oxygen Atmospheres: Effects on Normal Individuals and Patients with Chronic Cardiac and Pulmonary Insufficiency, Quart J. Med. **3**: 437 (July) 1934.

11. Barach, A. L.: The Therapeutic Use of Helium, J. A. M. A. **107**: 1273 (Oct. 17) 1936.

12. Jones, O. R., and Burford, G. E.: Massive Atelectasis Following Cyclopropane Anesthesia: Report of Cases and Theory of Cause and Prevention, J. A. M. A. **110**: 1092 (April 2) 1938.

13. Henderson, Yandell, and Haggard, H. W.: The Elimination of Carbon Monoxide from the Blood After a Dangerous Degree of Asphyxiation, and a Therapy for Accelerating the Elimination, J. Pharmacol. & Exper. Therap. **16**: 11 (Aug.) 1920; Report I of Commission on Resuscitation from Carbon Monoxide Asphyxia to American Gas Association: The Treatment of Carbon Monoxide Asphyxia by Means of Oxygen + CO_2 Inhalation: A Method for the Rapid Elimination of Carbon Monoxide from the Blood, J. A. M. A. **79**: 1137 (Sept. 30) 1922.

14. Sayers, R. R., and Yant, W. P.: The Elimination of Carbon Monoxide from the Blood by Treatment with Air, with Oxygen and with a Mixture of Carbon Dioxide and Oxygen, Pub. Health Rep. **38**: 2053 (Sept. 7) 1923.

15. Haldane, J. B. S.: The Dissociation of Oxyhemoglobin in Human Blood During Partial CO Poisoning, Proc. Physiol. Soc. London **45**: xxii, 1912.

16. Stadie, W. C., and Martin, K. A.: The Elimination of Carbon Monoxide from the Blood: A Theoretical and Experimental Study, J. Clin. Investigation **2**: 77 (Oct.) 1925.

of the value of adding carbon dioxide mixtures to oxygen in the treatment of carbon monoxide poisoning.

In respiratory failure in newborn infants, the inhalation of oxygen-carbon dioxide mixtures has been advocated by Henderson,[17] Coryllos and Birnbaum[18] and others. Expansion of an atelectatic lung may be hastened and mucus in the tracheobronchial tree may be loosened and subsequently eliminated by the deep breathing produced by carbon dioxide inhalations. Opponents of this procedure, such as Eastman,[19] report an increased hydrogen ion concentration, a relatively high carbon dioxide content and a lowered bicarbonate content in the blood of infants born in asphyxia and conclude that "the use of carbon dioxide as a resuscitating agent in asphyxia neonatorum is not only superfluous but may be even harmful in that it tends to aggravate an already existing acidosis," a view maintained by Kane and Kreiselman.[20] Martinez,[21] who also prefers pure oxygen to oxygen and carbon dioxide, employed a pulmotor (called a Resuscitator) in a series of 500 infants and believed it to be the most effective method of resuscitating babies. Despite early condemnation of the pulmotor, the employment of mechanical positive and negative pressure in a modern apparatus which has safety valves that prevent undue pressures in inspiration and expiration should be carefully reconsidered as a possibly beneficial resuscitating agent. Admitting the value of inhaling 5, 7 or 10 per cent carbon dioxide in combating respiratory depression, it should be remembered that other methods of providing oxygen to the tissues may be utilized. The Drinker Respirator is an example of a mechanical method of ventilating the lungs, and others are being developed which utilize alternating pressures. The value of carbon dioxide therapy cannot in the light of modern investigation be traced to a state of carbon dioxide deficit, since there has not been adequate evidence that such a state exists of sufficient severity or frequency in clinical illness. The advantages of a heightened pulmonary ventilation, increased muscle tonus, respiratory stimulation and a swifter disappearance of an anoxic state appear to account in the main for the marked benefit which this gas possesses, for the most part administered in combination with oxygen.

Mention has not been made of the administration of oxygen-carbon dioxide mixtures in the routine treatment of pneumonia or heart disease, as these claims were not advanced in the literature presented, and also because adequate physiologic or clinical evidence has not yet been published.

CONTRAINDICATIONS TO OXYGEN-CARBON DIOXIDE THERAPY

The inhalation of carbon dioxide in concentrations above 1 per cent stimulates the respiratory center and causes deeper breathing (Haldane[3]). The normal individual is conscious of an increased effort to breathe at concentrations of from 3.5 to 4 per cent, which is marked on even moderate exertion. To a patient who is dyspneic from congestive heart failure even these relatively low concentrations of carbon dioxide soon become unbearably burdensome. Concentrations of 5, 7 and 10 per cent administered for from five to ten minutes would provoke intolerable shortness of breath among the vast majority of dyspneic patients, especially in congestive heart failure, pulmonary emphysema and fibrosis. In massive collapse of the lungs, which may occur in the presence of postoperative pneumonia, the inhalation of carbon dioxide should be persisted in only until the breathing has been markedly increased in depth, for example, for a period of approximately five minutes.

When concentrations of 5 per cent are administered for periods over one-half hour, the signs of intoxication should be looked for. If 10 per cent carbon dioxide is given, the patient should be under careful observation from the start, and after from ten to fifteen minutes carbon dioxide toxicity must be kept in mind. In most cases the indication for treatment is a maintained increase in pulmonary ventilation; if this is secured by relatively low concentrations, higher concentrations should not be employed. The continuous use of 10 per cent carbon dioxide should be the highest concentration for routine use. In general, when respiratory depression has been counteracted it is better to stop carbon dioxide therapy or decrease the concentration to the lowest percentage compatible with the object in view, either normal or hyperventilation. The symptoms which should suggest termination of carbon dioxide treatment are unbearable dyspnea, vomiting, disorientation or a systolic blood pressure of 200. When the blood pressure reaches 200 as a result of inhalation of 10 per cent carbon dioxide, cardiac collapse and a convulsion may occur. These convulsions have been regularly induced by still higher concentrations of carbon dioxide as a treatment in patients with dementia praecox,[22] but they should obviously be avoided when carbon dioxide is administered as a respiratory stimulant.

Boothby[23] has warned against allowing a carbon dioxide concentration in excess of 1 per cent in any case in which there is the slightest degree of tracheal obstruction, such as may occur in operations on the upper part of the respiratory tract, after thyroidectomy and in the presence of considerable mucus in the respiratory tubal passageway. A heightened negative pressure within the chest becomes necessary to pull air into the lungs when there is obstruction between the alveoli and the larynx. If carbon dioxide were administered under these circumstances, the increased pulmonary ventilation would be accomplished by a still greater increase in the pathologically elevated negative chest pressure, the results of which are pulmonary edema, due to direct suction pressure on the alveoli, congestion of blood in the lungs and delayed entrance of blood into the extrathoracic aorta during the inspiratory cycle (Barach, Martin and Eckman[24]). Thus, in any clinical illness in which pulmonary edema is suspected, concentrations of from 5 to 10 per cent carbon dioxide are definitely contraindicated.

ADMINISTRATION OF CARBON DIOXIDE

The simplest method of giving a mixture of carbon dioxide and oxygen is to use a cylinder containing 5, 7 or 10 per cent carbon dioxide and 95, 93 or 90 per cent oxygen. In resuscitation cases, as from carbon monoxide poisoning, the 7 per cent carbon dioxide and 93 per cent oxygen mixture may be breathed through a mask during inspiration and exhaled through an expiratory valve during expiration. The mixture is delivered from the cylinder into a bag, which should be kept moderately full, and from there to the mask through a wide tube. The rate of flow is regulated by the gage. In one form of apparatus the movement of the bag on expiration acts as a lever shutting off the supply from the cylinder; on inspiration the supply recommences and is just sufficient for the needs of a patient.

A simple device has been used by Poulton in which a cylinder of pure oxygen fitted with a reducing valve delivers oxygen to a gas bag. Inspiratory and expiratory valves are fitted at the exit of the bag and a length of tubing of 1, 2 or 3 feet is interposed between the valve and the mask, which contains a single orifice to connect with the tube. The patient thus breathes pure oxygen, but in addition he rebreathes a certain amount of his own carbon dioxide from the dead space of the tubing.

Mixtures of oxygen and carbon dioxide may be used with a nasal catheter, but higher concentrations of carbon dioxide or larger flows of carbon dioxide and oxygen mixtures have to be employed because of dilution of the mixture during the inhalation of air. Carbon dioxide may also be administered in an oxygen tent; in this instance also higher concentrations of carbon dioxide than from 5 to 10 per cent or larger flows of the mixture are necessary to obtain the carbon dioxide concentration desired.

17. Henderson, Yandell: Incomplete Dilatation of the Lungs as a Factor in Neonatal Mortality, J. A. M. A. **96**: 495 (Feb. 14) 1931; Resuscitation, ibid. **103**: 750 (Sept. 8), 834 (Sept. 15) 1934.

18. Coryllos, P. N., and Birnbaum, G. L.: Bronchial Obstruction: Its Relation to Atelectasis, Bronchopneumonia and Lobar Pneumonia, Am. J. Roentgenol. **22**: 401 (Nov.) 1929.

19. Eastman, N. J.: Asphyxia Neonatorum, Internat. Clin. **2**: 274 (June) 1936; Fetal Blood Studies: Chemical Nature of Asphyxia Neonatorum and Its Bearing on Certain Practical Problems, Bull. Johns Hopkins Hosp. **50**: 39 (Jan.) 1932.

20. Kane, H. F., and Kreiselman, Joseph: The Carbon Dioxide Content of the Blood in the Newborn: Preliminary Report, Am. J. Obst. & Gynec. **20**: 826 (Dec.) 1930.

21. Martinez, D. B.: The Mechanical Resuscitation of the Newborn: Report of 500 Cases, J. A. M. A. **109**: 489 (Aug. 14) 1937.

22. Hinsie, L. E.; Barach, A. L.; Harris, M. M.; Brand, E., and McFarland, R. A.: The Treatment of Dementia Praecox by Continuous Oxygen Administration in Chambers and Oxygen and Carbon Dioxide Inhalations, Psychiatric Quart. **8**: 34 (Jan.) 1934.

23. Boothby, W. M.: Oxygen Therapy, J. A. M. A. **99**: 2026 (Dec. 10), 2106 (Dec. 17) 1932.

24. Barach, A. L.; Martin, J., and Eckman, M.: Positive Pressure Respiration and Its Application to the Treatment of Acute Pulmonary Edema, Ann. Int. Med. **12**: 754 (Dec.) 1938.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, MARCH 23, 1940

HEARINGS ON THE NEW WAGNER BILL

On Monday, March 18, the Subcommittee of the Committee on Education and Labor held hearings in Washington on bill S. 3230 introduced by Senator Wagner for himself and Senator George. This is the Wagner bill to make available hospital facilities for needy areas. The legislation was requested by President Roosevelt in a special message sent to Congress on his birthday. A full report on the significant statements made at this hearing will be published in a forthcoming issue of THE JOURNAL. At the morning session Senator Wagner opened the hearing with a statement of the reasons for the introduction of this bill. He also stated definitely that he did not anticipate a report on the original Wagner bill at the present session of Congress but that he had not abandoned the bill and would expect a report at the next session. Dr. Thomas Parran, Surgeon General of the United States Public Health Service, explained the objectives of the bill and the significance of the various passages. For the American Medical Association there appeared Dr. Olin West, Secretary and General Manager, who called the attention of the committee to the platform of the American Medical Association and to the memorandum which had been left with the President of the United States by a special committee appointed by the House of Delegates. These have previously been published in THE JOURNAL. Dr. R. G. Leland discussed the costs of building hospitals and costs of maintenance and indicated the necessity for a careful study of the costs of construction and maintenance in relationship to the building of such hospitals as are contemplated under this measure. Dr. Morris Fishbein, editor of THE JOURNAL, presented an analysis of the bill, indicating that section 2 of the bill does not define any time limitation whatever on the operation of the measure or indicate the possibility of incorporation of this measure in any future act. He indicated also the desirability that the National Advisory Hospital Council to be established under this measure should be given real authority, with the Surgeon General as chairman, as this measure may well be taken as a pattern for future legislation in relationship to the care of the sick. Under section 5 of the act it seemed desirable that the proposed advisory council be authorized to carry out provisions of the act, to formulate the standards, rules and regulations, review reports and inspections, and otherwise manifest actual authority rather than to act merely as an advisory body. Under section 6 of the act, the wording should be such as to limit the operation of the act exclusively to the conduct of the hospitals provided under the act, so that the act might not be used as authority for the Surgeon General of the United States Public Health Service to engage in general hospital surveys, inspection of professional services or the standards of hospitals. Special attention was called to part H of section 6, since the act makes no provision for disposal of the proposed hospitals should the leases be terminated by the Surgeon General. The suggestion was made that perhaps the Surgeon General should be authorized to negotiate with some other special agency for taking over the hospital, or that arrangements be made for the individual states to underwrite maintenance of such institutions, should local communities find it impossible to carry out their functions. It also seemed desirable that this section of the act forbid specifically that the federal government endeavor to man or maintain these hospitals. Attention was also called to a portion of section 7 of the act, which indicates that the Federal Works Agency be entitled to expend out of its appropriations such sums as may be necessary for the completion of these projects and without regard to specific limitations imposed on the use of the funds of the Federal Works Agency. Obviously this is a serious clause, because it removes limitations now existing on the Federal Works Agency as to the amount of money that may be spent on individual projects, and furthermore because it would permit expansion of the total sum available far beyond the actual appropriation. Thus the Federal Works Agency could provide all the costs of labor in the building of new hospitals to be constructed under this act. The recommendation was also made that the term "hospital" as used in the act shall be limited to physical facilities necessary for the care of the sick rather than, as now stated, "for the prevention, diagnosis, or treatment of disease, and for the protection of the public health." This seems important, since there is a wide divergence of opinion as to whether or not such hospitals shall be used as headquarters for public health agencies of the county, state or other organization to which a lease is granted or whether or not the hospital be devoted wholly to the care of the sick. Dr. W. D. Cutter of the Council on Medical Education and Hospitals supplied complete data regarding distribution of and need for hospitals.

Present at the hearing were Senators Taft of Ohio, Ellender of Louisiana, LaFollette of Wisconsin, George of Georgia, Wagner of New York and the chairman, Senator Murray of Montana, and for a brief time also

Senator Thomas of Utah. Senator Taft was particularly insistent in pointing out that the present measure abandons entirely the technic of grants in aid with matching appropriations. He was definitely opposed to the setting up of a chain of federal hospitals, feeling that the right to control such hospitals must rest with the individual states. Under no circumstances, he insisted, should federal institutions be permitted to interfere with nonprofit, voluntary or other private institutions. He also called attention to that section of the act which creates a new principle in relationship to the use of Federal Works Agency's money and WPA workers in construction of such institutions, insisting that preference might well be given unemployed labor and recognized workers concerned with the construction industry rather than to WPA workers exclusively.

At the afternoon session appeared Dr. John Peters, Mr. Ferguson representing the Federal Works Agency, Dr. Bert Caldwell for the American Hospital Association, Rev. P. R. Zwilling for the Protestant Hospital Association, and Monsignor William F. Montazon for the Catholic Hospital Association. Abstracts of their statements will be published as they become available.

Presumably the subcommittee will now prepare a new draft of the bill, incorporating such suggestions as were made which it thinks desirable. Just as soon as such a new draft becomes available, it will be given consideration by the Board of Trustees of the American Medical Association, and the membership of the Association will be informed as to the point of view of the Board with regard to the measure.

THE PLATFORM OF THE AMERICAN MEDICAL ASSOCIATION

The American Medical Association advocates:

1. The establishment of an agency of the federal government under which shall be coordinated and administered all medical and health functions of the federal government exclusive of those of the Army and Navy.

2. The allotment of such funds as the Congress may make available to any state in actual need, for the prevention of disease, the promotion of health and the care of the sick on proof of such need.

3. The principle that the care of the public health and the provision of medical service to the sick is primarily a local responsibility.

4. The development of a mechanism for meeting the needs of expansion of preventive medical services with local determination of needs and local control of administration.

5. The extension of medical care for the indigent and the medically indigent with local determination of needs and local control of administration.

6. In the extension of medical services to all the people, the utmost utilization of qualified medical and hospital facilities already established.

7. The continued development of the private practice of medicine, subject to such changes as may be necessary to maintain the quality of medical services and to increase their availability.

8. Expansion of public health and medical services consistent with the American system of democracy.

THE PRESS COMMENTS ON THE APPEALS COURT DECISION

Although the time is brief since the United States Circuit Court of Appeals in Washington announced its decision that the practice of medicine is a trade, several of the leading newspapers in the country have already indicated their point of view regarding this decision. This point of view is not wholly in agreement with the United States Circuit Court of Appeals. A few papers, on the other hand, have expressed their enjoyment in the decision, notably the Washington, D. C., *Times*, the New York *Times* and the Indianapolis *Times*. As might be expected, the New York *Times* engages in another slur at the American Medical Association and suggests that encouragement by the Association of various experiments "might have prevented the consideration of such monstrosities as the original Wagner Health Bill and would certainly have prevented a criminal action under the Sherman Act." This philosophizing of the New York *Times* after the event is a further indication of the complete failure of the editor of that newspaper even to begin to understand what the trouble is all about. Apparently both its editorial writer and Mr. Kaempffert (if they are not one and the same) have developed fixed opinions in this field and are not to be swayed by any attempt to examine carefully into the whole situation and the evidence.

The Washington, D. C., *Star* points out that the question of law in this case, despite its importance, is overshadowed by the factual issues. The Indianapolis *Star* says that Americans who still oppose the attempted regimentation of the New Deal will derive little comfort from this decision and, it continues, "The feeling persists that the Department of Justice crusade against the national medical organization may have been prompted less by alleged restraint of 'trade' than for the purpose of destroying the desired independence of the medical profession." Moreover, the St. Louis *Globe-Democrat* emphasizes that "Doctors are convinced, and correctly, that best interests of the nation's health can never be served by a system that would destroy the intimate relationship between physician and patient, that would put doctors on a salary, that would tend to stifle scientific initiative and the highest type of medical care." Commenting particularly on this decision, the St. Louis newspaper says "Legal interpretation often amazes the layman. For the court to designate the practice of medicine a trade seems preposterous. There is and always has been a chasm of distinction between trade and profession. Legal definitions, of course, have before been known to ignore the dictionary. Yet most learned judges have striven to interpret words accurately. Certainly the Congressmen who passed the Sherman Act never faintly imagined their law would be construed to apply to medical practice. This case should be promptly appealed to the Supreme Court. The American Medical Association is fighting for integrity of a profession that has given the United States the finest health protection of any

nation in the world. If it is to continue to new achievement it must be free of regimentation, unhampered in development of standards and morale and practice, whose requirements doctors themselves may be justly assumed to know best."

The Cincinnati *Times-Star* writes "This is a very far-reaching decision. Should it hold good in preventing medical societies from disciplining their members, it will prevent bar associations from imposing standards of legal conduct under penalty of disbarment. Its effect upon trade unions would be nothing less than to rule out the closed shop. It is true that the Clayton Act exempts trade unions, as such, from the provisions of the Sherman Act. But the Clayton Act does not exempt any specific action of trade unions. The mere act of joining or organizing a union is not a violation of the Sherman Act, but the act of preventing a non-union man from getting a job in a closed shop would assuredly, under the Washington ruling, be a violation. It seems clear to us that when Congress passed the Sherman Act it used the word 'trade' to cover the field of commercial activity. The idea that medical societies, bar associations, etc., might be classed as 'trade' groups never occurred to anybody until Thurman Arnold had the bright notion of prosecuting the A. M. A. because he disagreed with its opinion of group medicine. It will be a curious irony if the New Deal effort to dictate the professional standards of physicians should ultimately destroy a privilege sacred to labor unions."

The Detroit *Free Press* asks what is to become of the long established distinction between the trades and the professions and hints that such a decision might interfere with freedom of worship, because under this decision "competition among exponents of creed would become an activity subject to legal inquiry and regulation in case anybody should charge 'unfair trade practices' or efforts to 'create a monopoly.'" The Detroit *Free Press* continues "It may be assumed, too, that the practice of law, invention, art, and the creation of fine music, all do become trades, and subject to those legal restrictions that may be necessary in a degree for the regulation of industry, business and commerce, but are bound to be deadly if applied to endeavor that is basically individual and creative."

The editorial which appeared simultaneously in the Washington, D. C., *Times* and in the Indianapolis *Times* is devoted primarily to an attack on the unions and says that the doctors and the carpenters seem to be in the same boat. This editorial attacks particularly the leaders of union labor and, by implication, leaders in the field of medicine, arguing that Mr. Arnold is not interested in attacking the workers but only in attacking their leaders. This is the same type of philosophy which says that it is not the German people with whom England is at war but only Hitler.

A final editorial from the *Daily Idahonian*, published in Moscow, Idaho, uses the whole incident in a manner which will hardly give aid and comfort to Mr. Arnold or any one else who is interested at all in the quality of medical service. This editorial says "Similarly certain types of healers are barred from most hospitals. Why they should be is something the average layman has never been able to understand. Why osteopaths or chiropractors should be refused the right to hospitalize their patients in buildings endowed by philanthropists for the public good, or built with public funds or through public subscription, is without logic or sane reasoning."

No doubt those who have been primarily concerned in breaking down established order in the field of medicine, and who care little or not whether the high standards of medical service which now prevail are wrecked, are rejoicing in this appeal that the hospitals be opened without restraint to every half-educated medical pretender and charlatan.

SCIENCE AND SAL HEPATICA

If you listen to Fred Allen on Wednesday nights, and apparently a good many people do, you will hear his announcer make some comments about the scientific research conducted by leading medical magazines which indicate that a high percentage of doctors always prescribe a saline laxative when treating a common cold. Of course the names of the leading medical magazines are not given; yet it would not be hard to guess the name of the commercial publication that conducted this survey for the Bristol-Myers Company.

Part of the scientific story is the claim that Sal Hepatica is the "mineral salt laxative that does two things, not just one; it rids the body of waste and it also combats acidity." The history of Sal Hepatica is a strange commentary on the kind of science that used to be sold to credulous Americans. In 1911 Sal Hepatica was advertised as a uric acid solvent, said to be indicated in stomach, liver and kidney disorders, and especially beneficial in rheumatism and gout. In 1916 it was promoted because it was said to be useful in the treatment of pyorrhea. By 1929 it was called the American equivalent of European spas, and listeners were told that it was good also for headaches, colds, rheumatism and autointoxication. Actually there is nothing to Sal Hepatica according to recent analyses except Glauber's salt, baking soda and tartaric acid, common salt, sodium phosphate, a trace of lithium carbonate and water. Any doctor knows what that is good for and a variety of conditions which it is not good for.

Quite recently Sal Hepatica has gone exceedingly high hat. In an advertisement in *Drug Topics* the druggists are told that "scientific research on Sal Hepatica never relaxes; research men continually put it through its laboratory and clinical paces. New findings are brought to the attention of practically every physician, dentist, nurse, and osteopath in the country." Here obviously is a product which is prescribed, according to its promoters, not only by physicians but by dentists, nurses and osteopaths.

Among the advertisements which the company offers to the kind of professional publications that will carry them is one dealing with the high incidence of a condition called "fetor ex ore," in relation to which it is said that "clinical studies have shown that the waste-laden colon may readily be the causative factor in offensive breath." Whose clinical studies?

Somehow the whole set-up, including the questionnaire to the doctors conducted by the "leading medical magazine," the scientific research and the advertisements, seems to be best described in the word that the company features in its latest advertisement. Bristol-Myers found a word for it, and that word is "fetor."

Current Comment

FURTHER COMMENTS BY THE COURTS ON BRINKLEY

In the decision rendered by the United States Circuit Court of Appeals in New Orleans by Circuit Judges Foster, Hutcheson and McCord, certain statements were made relative to the practice of John R. Brinkley which deserve repetition. The statement prepared by Circuit Judge Foster begins by pointing out that the defendant pleaded the truth of the statements of fact in the article, that the opinions were based on facts and are reasonable, and that the publication is privileged under the law of Texas. In the appeal Brinkley's attorneys offered thirty-two assignments of error. Concerning these the court said that the evidence of the plaintiff, who was placed on the stand by the defendant, tended to show the truth of the statement of facts complained of. Furthermore, the court stated that it could find no substantial evidence tending to show that the defendant was actuated by malice. The remainder of the statement of Circuit Judge Foster is given in toto for the light that it casts on the court's opinion of Brinkley's methods of practice:

> The gist of the article complained of is the charge that plaintiff is a charlatan. A charlatan is defined as "one who pretends to more knowledge or skill than he possesses, especially in medicine; a quack." A quack is defined as "an ignorant or fraudulant pretender to medical skill" and an element of quackery is "to advertise or urge, as a quack does his remedies." See Century Dictionary, "charlatan" "quack."
>
> The admissions of plaintiff in his testimony tend to show that he obtained his medical degree from an institution known as a diploma mill; that he had been practicing medicine since 1915; that he began practicing medicine in Milford, Kansas, in 1917; that he advertised, by pamphlets and newspapers and by radio broadcasting from his own station, an operation for transplanting goat glands in men for the purpose of sexual rejuvenation; that he had treated between 5,000 and 6,000 persons and he charged some of them nothing and some of them $750 for the operation; that his gross income was about $100,000 per month; that he abandoned this practice in 1933; that his license to practice medicine in Kansas was revoked in 1930 and his radio license was revoked by the Federal Communications Commission in 1930; that a license he had obtained to practice medicine in Connecticut was revoked; that he was indicted in California for a conspiracy to unlawfully practice medicine; that at the time the article was written he was advertising, by radio broadcasting from a Mexican station, his skill in treating prostatic troubles; that he would prescribe by letter for persons who wrote to him describing their symptoms, for which he charged $2.
>
> All learned professions have their standards of ethics. A lawyer who advertises and gives advice by mail without seeing his client would certainly be considered a shyster. There is no doubt whatever that plaintiff by his methods violated accepted standards of medical ethics.
>
> We think above stated facts are sufficient to support a reasonable and honest opinion that plaintiff should be considered a charlatan and quack in the ordinary, well understood meaning of those words. We conclude this was a matter of public concern and the articles were published for general information. Therefore, the publication is privileged.

In the light of this statement by the United States Circuit Court of Appeals, one may well wonder how long the Post Office Department will continue to hesitate.

PROGRESS IN THE SELENIUM PROBLEM

The development of our knowledge of selenium and the importance of this information in relation to economic problems and to public health have been recorded here at intervals.[1] Moxon and Du Bois,[2] at the South Dakota Agricultural Experiment Station, have now determined the influence of various chemical elements on the toxicity of selenium-containing grains. These investigators demonstrated that arsenic, in the form of sodium arsenite, administered in the drinking water in a concentration of 5 parts of arsenic per million, was effective in completely preventing the symptoms of selenium poisoning, i. e., inhibited growth and extensive liver damage. The same level of tungsten, in the form of sodium tungstate supplied in the drinking water, was only partially effective in preventing the typical liver damage caused by the selenium-containing diet but appeared to decrease the mortality of the rats. Fluorine, molybdenum, chromium, vanadium, cadmium, zinc, cobalt, nickel and uranium salts caused an increase in mortality. The effectiveness of arsenic is reminiscent of the ability of aluminum salts to nullify the undesirable effects of the ingestion of fluorine salts and is suggestive of a direct action of arsenic on the absorption of selenium from the gastrointestinal tract. The solution of the problem of the chemical nature of the selenium-containing constituent of seleniferous grains now appears to be at hand. In a preliminary report, Horn and Jones,[3] of the United States Department of Agriculture, have announced the isolation of a crystalline, selenium-containing amino acid from hydrolysates of seleniferous grains. The empirical formula of the compound suggests a structure similar to that of the sulfur-containing amino acid cystine. Indeed, the isolated product appears to be closely associated with a sulfur-containing amino acid in the grain. The close chemical relationships of selenium and sulfur indicate interesting problems in the mode of biologic synthesis of the selenium-containing amino acid, its physiologic effects, and its metabolism in the mammalian organism.

1. The Selenium Problem, editorial, J. A. M. A. **104:** 50 (Jan. 5) 1935; Toxic Effects of Selenium, Current Comment **106:** 926 (March 14) 1936; Selenium Content in Wheat, **107:** 134 (July 11) 1936; The Possibility of Human Selenium Poisoning, **108:** 210 (Jan. 16) 1937.
2. Moxon, A. L., and Du Bois, K. P.: J. Nutrition **18:** 447 (Nov.) 1939.
3. Horn, M. J., and Jones, D. B.: J. Am. Chem. Soc. **62:** 234 (Jan.) 1940.

ORGANIZATION SECTION

ALLOCATION OF FEDERAL FUNDS TO STATES

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Grants of funds from one state or government to another or to private persons, companies or corporations for a wide variety of purposes have been known for several hundred years. Grants have been made to assist in the establishment or support of an enterprise deemed advantageous to the public, in aid of different forms of transportation or other public utilities, as a simple gift or an amount in excess of the usual charges for services, or to aid in establishing or maintaining a service or equipment larger or more powerful than the state of trade would warrant. Such funds were often provided formerly in accordance with a treaty, sometimes to secure neutrality, but more frequently to meet the expenses of carrying on a war.

More recently in the United States, efforts have been made almost continuously to have the federal government assume many activities and a considerable portion of the costs which were formerly conducted and supported solely by local and state governments. Justification for the use of federal funds is claimed for the construction and maintenance of highways under the constitutional authority of the federal government over interstate commerce and over post roads. The programs toward the eradication of the European corn borer, the pink boll weevil and other pests which endanger plants and animals are claimed to be proper activities to be supported by federal funds or grants, since they are within the limits of the normal federal control of interstate commerce by controlling such diseases at their points of propagation. Prevention of forest fires, in cooperation with the states, may justify the use of federal funds to safeguard from fire the forests owned by the federal government.

Many will recall the controversy that raged in 1921 over the use of federal funds for activities in the field of maternity and infancy under the title of the Sheppard-Towner act, and again in 1927 when that act was continued in force for two years more.

The principle of grants-in-aid to states was again brought into operation through the provisions of the Social Security Act of 1935, and this was also the principle underlying the method of development of a considerable part of the Wagner health bill of 1939.

It is not proposed to enumerate here all the purposes for which federal funds have been made available for grants-in-aid to states or to list all the payments to states each year under provisions of the several federal acts. Since the philosophy of grants-in-aid has become prevalent in federal legislation it has been necessary for most states to enact laws to provide funds and methods of administration which would enable them to qualify for federal allotments.

The results have been apparent. The benefits that have come through the expenditure of the combined federal-state funds have often been accompanied by an additional strain on the tax structure of the state and have always been accompanied by an unavoidable amount of federal participation in and control of the proposed programs.

The most extensive federal grant-in-aid program that has yet been developed in the field of medicine is to be found under several titles of the Social Security Act. Titles I, Old Age Assistance, IV, Aid to Dependent Children, III, Unemployment Compensation, and X, Aid to the Blind, only indirectly have some bearing on medicine, since theoretically these titles are supposed to enable the recipients to be provided with the necessities of life. However, titles V and VI have the direct purpose to enable states to furnish services for the promotion of the health of mothers and children, surgical and hospital care of crippled children, the vocational rehabilitation of the physically disabled and the organization and maintenance of public health services.

The expenditure of federal funds through grants-in-aid under the several titles of the Social Security Act for the fiscal year ended June 30, 1938, was $275,000,629.80. The amount estimated to be necessary for the year ended June 30, 1939, was $323,000,000 and for the fiscal year ending June 30, 1940, for the same purposes, $343,150,000.

For the fiscal year ending June 30, 1939, the grants to and expenditures within thirty-seven states and the District of Columbia exceeded and in sixteen states were less than the total internal revenue collections. Information is not available to show in detail the purposes for which these grants and expenditures were made or what proportion of the total amount of $4,393,927,000 was grants and what proportion constituted some other type of funds.

For the fiscal year ended June 30, 1939, the payments to states under title VI, section 601, of the Social Security Act, Public Health Work, totaled $7,985,119.61.

In the three years and five months since funds first became available under title VI of the Social Security Act, $27,333,000 has been appropriated by the Congress for grants-in-aid to the states for public health work.

On Jan. 1, 1939, annual appropriations for health work, in the cooperative projects alone, from local and state sources totaled $44,861,322, an increase of more than $13,000,000 in four years.

The allotments of funds to states in the development of the syphilis program of the U. S. Public Health Service were derived from the Deficiency Appropriation Act, Public No. 723, Seventy-Fifth Congress. Of the $3,000,000 appropriated for this purpose for the fiscal year ended June 30, 1939, $2,400,000 was allocated to the states. Of the $5,000,000 appropriated by the regular appropriation act, Public No. 65, Seventy-Sixth Congress, for the fiscal year ending June 30, 1940, for this purpose an estimated $4,000,000 has been allocated to the states, territories and insular possessions.

The allotments to states for public health work and for the syphilis program are made through the Public Health Service, Federal Security Agency.

The allotments of funds to states for Maternal and Child Health Services, title V, part 1, Crippled Children, title V, part 2, and Child Welfare Services, title

V, part 3 of the Social Security Act, are made through the Children's Bureau, Department of Labor.

At the beginning of the fiscal year 1939, an amount of $4,707,734.60 was available for the purposes of title V, part 1, Social Security Act, for maternal and child health services. These available funds were alloted under funds A and B. Allotments under fund A were of two types—uniform allotment $1,020,000 and allotment on the basis of live births in the state to total live births $1,800,000. Fund B was allotted on the basis of need for assistance in carrying out state plans after the number of live births was taken into consideration —the amount thus allotted was $980,000. The term "state" includes Alaska, District of Columbia and Hawaii. The amount of federal funds budgeted in state plans as approved, for 1939, was $4,409,751.69. Of these budgeted funds only $3,724,362.29 was paid to the states, $2,744,362.29 from fund A and $980,000 from fund B.

At the beginning of the fiscal year 1939, a total of $4,176,690.74 was available for services for crippled children (title V, part 2), a balance from 1938 of $1,326,690.74 and a new appropriation of $2,850,000. These funds were allotted partly as a uniform allotment, $1,020,000, and partly on the basis of need, taking into consideration the number of crippled children and the costs of service, $1,830,000.

Federal Appropriations for Health and Welfare Services Under Social Security Laws

(Prepared by the Bureau of Legal Medicine and Legislation, American Medical Association, Chicago, Aug. 23, 1939.)

Purpose of Appropriation	Total Appropriations Made for Fiscal Year Ending June 30, 1940, to Carry Out Social Security Act, as Amended	Total Appropriations Authorized for Each Fiscal Year by Social Security Act, as Amended
Grants to states for maternal and child health services (under the supervision and control of the Children's Bureau)	$4,800,000	$5,820,000
Grants to states for services to crippled children (under the supervision and control of the Children's Bureau)	3,350,000	3,870,000
Grants to states for child welfare service (under the supervision and control of the Children's Bureau)	1,505,000	1,510,000
Grants to states for public health work (under the supervision and control of the U. S. Public Health Service)	9,500,000	11,000,000
Total appropriations for health and welfare services	$19,155,000	$22,200,000

Federal funds budgeted in approved state plans amounted to $3,436,065.71, of which the amount $2,997,914.77 was paid to the states.

Funds available for child welfare services, title V, part 3, of the Social Security Act, for the fiscal year ended June 30, 1939, were $2,225,799.21, of which $725,799.21 represented a balance from the fiscal year 1938.

These funds were allotted partly by uniform allotment, $510,000, and partly on the basis of the ratio of rural population in the state to total rural population, $990,000.

The federal funds budgeted in approved state plans were $2,147,608.11, of which $1,520,893.74 was paid to the states during the year.

Impossible as it is to discuss here all the details and amounts of money involved in grants-in-aid during recent decades, certain tendencies that are frequent accompaniments of such methods of financing should not be overlooked.

Grants-in-aid are always accompanied by some rules, regulations and standards of administration. The rules and regulations constitute a leveling process by which direction and control are centralized, local control and autonomy are lost, and each part of the country which accepts grants-in-aid funds is required to fit the same federal mold; standards are usually minimum and when applied to the distribution of medical services actually may operate as a secondary system of licensure.

Initiative disappears and individual and community responsibility are ignored and discouraged by a not too cleverly veiled assumption of superiority and usurpation of power.

Too often grants-in-aid, temptingly offered, induce states and many communities within their boundaries to extend themselves in the organization of services and facilities far beyond their ability to maintain.

Financing by means of grants-in-aid usually follows a fairly rigid pattern. Although many administrators of such combined funds use good judgment in the application of the funds to the best purpose, the possibility of development by experimentation is often largely eliminated.

It has occurred in recent years in the development of federal programs, extended through grants-in-aid, that lobbyists from some federal agency have endeavored to influence state legislatures in the passage of a particular, ready-made bill to enable the state to qualify with certainty for the federal grants. Such tactics most assuredly extend the influence of the centralized government into every part of the nation.

In an address before the Society of the Daughters of the American Revolution, Washington, April 15, 1928, President Coolidge said:

> There are always those who are willing to surrender local self government and turn over their affairs to some national authority in exchange for a payment of money out of the federal treasury.
>
> Whenever they find that some abuse needs correction in their neighborhood, instead of applying a remedy themselves they seek to have a tribunal sent on from Washington to discharge their duties for them, regardless of the fact that in accepting such supervision they are bartering away their freedom. Such actions are always taken on the assumption that they are a public benefit.
>
> Somewhere, Lincoln said something to the effect that tyrants always bestrode the necks of the people upon the plea that it was for their good. He might have added that the people suffered the rule of tyranny in the hope that it would be easier than to rule themselves.
>
> We have built our institutions around the rights of the individual. We believe he will be better off if he looks after himself.
>
> We believe that the municipality, the state and the nation will each be better off if they look after themselves. We do not know of any other theory that harmonizes with our conception of true manhood and true womanhood.

If the pattern of financing by federal grants-in-aid is to become a fixed part of the distribution of medical and health services, the medical profession should consider well the values that may be lost by the gradual usurpation of control by a central authority.

If significant losses are to be avoided, the medical profession must continue to take a sympathetic interest in the methods of distributing medical services as well as the development of the scientific methods of diagnosis and treatment. There is little reason to expect the legislative bodies that establish the policy of grants-in-aid to modify or abandon the policy as long as officials who administer the combined federal-state funds clamor for the federal grants.

ESSEX COUNTY (N. J.) MEDICAL SOCIETY'S MEDICAL WEEK

The Medical Exhibit recently sponsored by the Essex County Medical Society was designed as an educational project for the public, and it was eminently successful. The Essex County Dental Society and the New Jersey Pharmaceutical Association participated.

The funds for the exhibit, amounting to $4,000, were provided by Ciba Pharmaceutical Products, Inc., of Summit, Schering Corporation of Bloomfield and Hoffmann-LaRoche, Inc., of Nutley. These companies helped in other ways, especially by the assembly of three exhibits—Vitamins, Ductless Glands and Menstrual Cycle—which were identical with those which these companies presented at the world's fair.

The exhibit represented the cooperative effort of the Essex County Medical Society as a whole. No individual doctor or hospital was expected to gain any publicity. Anonymity was preserved successfully and was carried to the extent of having physicians called over the loud speakers by numbers only. Widespread publicity was obtained by placards displayed in doctors' and dentists' offices and in pharmacies throughout Essex County; also by placards on public service buses, by newspaper accounts of various sections of the exhibit and by radio talks.

The actual conduct of the exhibit was in the hands of the Woman's Auxiliary. A total of 384 women donated not less than three hours' time during the week in order to staff the various units of the exhibit, to furnish information and to perform other functions. The actual demonstrations of laboratory technic, cardiography and basal metabolism were conducted by graduate nurses from the various hospitals (also anonymously) and by laboratory technicians. No physician appeared at any time to demonstrate the various units of the exhibit.

The exhibits consisted of thirty-three units. They included charts, diagrams, pathologic specimens, instruments of precision, surgical instruments and laboratory equipment. Actual demonstrations were made under the microscope of blood stains, bacteria, spirochetes and gonococci. Probably the most interesting from the lay point of view were the clinical laboratory exhibit, where many slides were visible under microscopes, the pneumonia exhibit, the anesthesia exhibit, the operating room, the maternity and child welfare exhibits and the vitamin, endocrine and menstrual cycle exhibits. Each individual unit of the exhibit was in charge of a subcommittee which attended to details of the assembly of its unit.

The moving picture program, which was on continuously from noon to 8 p. m., played to "standing room only" throughout the week.

The speakers were from out of town, with one exception, and that one is not engaged in private practice. They included:

Dr. Howard W. Haggard, New Haven, Conn., Medical Change and Social Change.
Dr. Grant Thorburn, New York, Tuberculosis.
Dr. Charles Hendee Smith, New York, Health Habits for Children.
Dr. Paul Padget, Baltimore, The Layman's Part in Syphilis Control.
Dr. Harrison S. Martland, Newark, N. J., Medical Detection of Crime.
Inspector E. P. Coffey, Federal Bureau of Investigation, Washington, D. C., Scientific Crime Detection.
Florence B. Hopkins, M.D., D.M.D., Boston, Dentistry in Its Relation to Health.

The speakers addressed capacity audiences each night. The total recorded attendance was 40,350 persons.

The exhibit demonstrated an immense interest in medical matters and the consensus was that the Essex County Medical Society gave them a wonderful educational opportunity.

The Nutley *Sun* editorialized about the exhibit in part as follows:

A Better Understanding

"The Essex County Medical Society has made a valuable contribution to bringing about a better understanding and relationship between the medical profession and the public. Thousands visited the exhibit sponsored by the society in Newark last week. The layman was offered the opportunity through displays, motion pictures and lectures by prominent men in the profession to gain knowledge about which he was completely in the dark. Both the public and the profession gained through this type of educational program.

"One of the biggest tasks that face medical men is breaking down the layman's fear and ignorance of medical facts and problems. Exhibitions such as those sponsored by the Medical Society will contribute greatly in spreading the doctrine that preventative measures which can be taken in medicine will go a long way toward eliminating suffering, unhappiness, big doctors' bills and a short life. . . .

"The Essex County Medical Society has set an example for all of the profession to follow. It is in effect the laying of the groundwork for a new and better relationship between the physician and his patients. The popularity of the Newark exhibit should indicate to physicians that there are many of the public who are eager to learn more about medical problems. To the public it should demonstrate that there is a willingness and an eagerness on the part of doctors to become advisers and educators."

MEDICAL LEGISLATION

MEDICAL BILLS IN CONGRESS

Change in Status.—The Senate Committee on Education and Labor held hearings March 18 on S. 3230, the bill introduced by Senator Wagner, for himself and Senator George, to promote the national health and welfare through appropriation of funds for the construction of hospitals.

Bills Introduced.—S. 3529, introduced by Senator Reynolds, North Carolina, proposes to authorize the Administrator of Veterans' Affairs to furnish domiciliary care and medical and hospital treatment to former members of the Army, Navy, Marine Corps or Coast Guard who were not dishonorably discharged therefrom and who served at least one enlistment period. S. 3579, introduced by Senator Walsh, Massachusetts, proposes to extend the federal old-age and survivors' insurance benefits of the Social Security Act to employees of corporations, community chests, funds, or foundations organized and operated exclusively for charitable, scientific, religious, literary or educational purposes, or for the prevention of cruelty to children or animals. H. R. 8128, introduced by Representative Voorhis, California, proposes to grant permanent and total disability ratings to veterans suffering from severe industrial inadaptability as a result of war service. H. R. 8823, introduced by Representative Shafer, Michigan, proposes to extend the benefits of the United States Employees' Compensation Act to emergency-relief employees suffering from occupational diseases. H. R. 8918, introduced by Representative Thill, Wisconsin, proposes to authorize a federal income taxpayer to deduct amounts actually paid during the taxable year for the funeral and burial of the taxpayer's husband or wife, an individual, or a dependent for whom a credit is allowed under the law. H. R. 8915, introduced by Representative Gearhart, California, proposes to authorize an appropriation of $2,000,000 to construct in one of the counties of Fresno, Kern, Kings, Madera, Merced, Stanislaus or Tulare, Calif., a veterans' hospital of 300 bed capacity, for the accommodation of veterans entitled to such facilities under existing and future law.

STATE MEDICAL LEGISLATION

Rhode Island

Bills Introduced.—S. 175 proposes to require an applicant for a license to practice any form of the healing art to present proof that he had successfully completed a satisfactory two year premedical course in a college properly accredited by the department of education to teach premedical subjects, prior to his enrolment in the professional college from which he is

graduated. H. 803 proposes to prohibit the issuance of a license to practice any form of the healing art to a graduate of a foreign school of the healing art unless such applicant is a citizen of the state.

Bill Introduced.—S. 203 proposes to authorize a sexual sterilization of inmates of state institutions afflicted with insanity, idiocy, imbecility, feeblemindedness or epilepsy.

New York

Bills Introduced.—S. 1445, A. 1812 and A. 1842 propose to establish a system of compulsory and voluntary health insurance, the benefits of which are to consist of all forms of medical, dental, hospital and nursing care and treatment and stated cash benefits. S. 1451 and A. 1806, to amend the law requiring a public welfare district to provide necessary medical care for persons under its care and for such persons otherwise able to maintain themselves but who are unable to secure necessary care, proposes that the determination as to the medical care necessary for an eligible person must be made with the advice of a physician. A. 1815 proposes to permit the sale at retail or the furnishing of hypodermic syringes or hypodermic needles to podiatrists without the written order of a licensed physician or veterinarian, as the present law requires. S. 1520 and A. 1856, to amend Laws, 1938, c. 682, which declares the policy of the state with regard to the health of its inhabitants and creates a temporary state commission to study and recommend ways and means for carrying out such declared policy, proposes to authorize the commission in question to make an investigation, study and analysis of the general subject of care and hospitalization of persons suffering from tuberculosis. A. 1940 proposes to authorize the board of education in each city and union free school district, and the trustee or board of trustees of a common school district, to employ such podiatrists as may be necessary to perform such duties, including health instruction, for the benefit of the public schools as may be prescribed by such board or trustees.

Bills Introduced.—S. 1801 proposes to make it a misdemeanor for any hospital, sanatorium, convalescent home or other place for the care and treatment of the sick and injured to refuse to administer emergency aid, treatment and care to any sick or injured person or to require any deposit, agreement or other act as a condition precedent to rendering such aid. A. 2017 proposes to grant relief clients the right to select the physician or dentist they desire to treat them. A. 2039, to amend the provisions of the medical practice act requiring licentiates before beginning to engage in the practice of medicine to register their licenses with the county clerk in the county in which they intend to practice, proposes that in counties comprised in the city of New York the registration fee shall be $2.

Virginia

Bills Introduced.—H. 200 proposes that every doctor of medicine shall be required to obtain a revenue license. Every doctor of medicine who has been licensed for less than five years is to be required to pay $10 and those who have been licensed and who have practiced for five years or more will pay $15. The bill contains a proviso that every doctor of medicine who has been licensed for five years or more and who maintains an office in any community having a population of 5,000 inhabitants or more shall pay $25, except that no doctor whose receipts from the practice of his profession were less than $500 gross during the preceding year shall be required to pay more than $10.

WOMAN'S AUXILIARY

Arkansas

The third district medical auxiliary met in Stuttgart October 26. Mrs. H. T. Smith, wife of the president-elect of the Arkansas Medical Society, gave plans for the observance of Doctors' Day. Miss Erle Chambers, executive secretary of the Arkansas Tuberculosis Association, spoke on "The Program of the Association in Arkansas" at the November meeting of the auxiliary to the Pulaski County Medical Society.

Mrs. L. H. Lanier discussed the National Health Program at a recent meeting of the auxiliary to the Miller-Bowie Counties Medical Society in Texarkana.

New York

Mrs. G. Scott Towne, president, auxiliary to the Medical Society of the State of New York, spoke at a recent meeting of the auxiliary to the Schenectady County Medical Society in Saratoga Lake. A project of the auxiliary to the Kings County medical society is raising funds for the Physicians' Home. An auxiliary to the Fulton County Medical Society was organized in Johnston, November 21. Mrs. B. G. McKillip, Gloversville, was elected president.

Tennessee

The auxiliary to the Shelby County Medical Society assisted in the entertainment of members and guests who attended the meeting of the Southern Medical Association in Memphis November 21-24. Dr. Willis C. Campbell addressed members at the meeting of the auxiliary to the Shelby County Medical Society in Memphis October 18.

West Virginia

The auxiliary to the Raleigh County Medical Society met in Beckley October 30, with thirteen members present. The relation of the auxiliary to the medical society was discussed.

MEDICAL ECONOMIC ABSTRACTS

PACIFIC STATES MEDICAL EXECUTIVES' CONFERENCE

The third Pacific States Medical Executives' Conference was held in Seattle Dec. 10, 1939. Representatives were present from California, Idaho, Oregon, Washington, Montana and British Columbia. The conference aims only at a discussion of common problems with exchange of ideas, and it has no executive or legislative capacity. Charles Dukes, of Oakland, Calif., opened the discussion on care of the low wage group. W. W. Baum, of Salem, Ore., outlined the condition in Oregon for the care of the low wage group; V. W. Spickard, of Seattle, explained the Washington system. R. H. Fletcher, of the Washington State Department of Health, discussed the plan being generally followed in that state for the care of the indigent. Charles Wilson, of Portland, Ore., opened the discussion on postgraduate medical education. A. B. Hepler, of Seattle, stated that it was planned to establish in Washington a circuit of postgraduate lectures each year and that it is proposed to establish a speakers' bureau listing those willing to present papers and clinics on various subjects. Among others, two representatives of the Farm Security Administration from Portland discussed the care of Farm Security Administration clients. It was brought out that no uniform program had been proposed by the Farm Security Administration for the care of the rehabilitation clients. Charles Hunt, of Eugene, Ore., described a professional society organized about eight years ago which comprises "a loose affiliation of medical men with physiotherapists, dentists, certified public accountants, graduate nurses, pharmacists, radiographers, veterinarians, and two groups of architects," based on the common need of maintaining and improving standards of all types of professional service.

Harry Rhodehamel was reelected president of the conference and Clyde Foley secretary. Portland, Oregon, was chosen as the permanent meeting place. About forty-one persons attended the conference.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

CALIFORNIA

Popular Medical Lectures.—The Stanford University School of Medicine announces the fifty-eighth course of popular medical lectures to be given at Lane Hall, San Francisco. The program is as follows:

Dr. Hans Lisser, April 5, Outstanding Achievements in Endocrinology.
Dr. Frederick A. Fender, April 19, Epilepsy and the Convulsive State: New Light on an Age-Old Problem.
Dr. Nelson J. Howard, May 3, Civilization's Challenge to Surgery: Recent Developments in the Treatment of Injury.
Dr. Eric Liljencrantz, May 17, Aviation Medicine.

Society News.—A panel discussion on hyperthyroidism constituted the program of the San Francisco County Medical Society, March 12, with the following speakers: Drs. Jesse L. Carr, Arthur L. Bloomfield, Jay Marion Read, Paul A. Gliebe, Frederick H. Rodenbaugh and Philip K. Gilman.——Dr. Ludwig A. Emge, San Francisco, addressed the San Diego County Medical Society, February 13, on "Reflections on Gynecological Procedures." Dr. Robert W. Langley, Los Angeles, discussed "Heart Sounds, a Clinical Experiment in Sound Photography," before the society, March 12.

Alumni Day.—The University of California Medical School, San Francisco, will hold its semiannual clinics for alumni and other physicians, March 27, to observe the university's seventy-second birthday. Clinics, demonstrations and ward rounds and the following lectures will make up the program:

Drs. Edward W. Twitchell, Paul A. Gliebe and Percy P. Poliak, Problems in Schizophrenia with Metrazol and Insulin.
Dr. Theodore Eric Reynolds, Oakland, History and Pharmacology of Sulfanilamide.
Dr. Salvatore P. Lucia, The Unusual Manifestation of Sulfanilamide Therapy.
Dr. John W. Brown, Applications of Chemotherapy in the Treatment of Pneumonia.

Herzstein Lectures.—The seventh course of Herzstein medical lectures will be delivered by David B. Dill, Ph.D., professor of industrial physiology, Harvard Medical School, Boston. The series is as follows:

April 8, High Temperatures. Racial and Individual Adaptability to Hot Climates; Various Types of Breakdown in Temperature Regulation; Clinical Applications of Hyperthermia.
April 10, Low Temperatures. Metabolic and Dietary Adjustments in Cold Climates; Dependence of Resistance on the Internal Environment; Clinical Applications of Hypothermia.
April 12, High Altitudes. Respiratory Adaptations to Oxygen Lack.

The lectures, which will be given in the auditorium of the University of California Extension Division, San Francisco, are delivered on alternate years under the direction of the medical schools of Stanford University and the University of California.

DELAWARE

Society News.—A symposium on bronchiectasis was presented before the New Castle County Medical Society, February 20, in Wilmington by Drs. Lawrence D. Phillips, Marshallton, Lewis B. Flinn and William M. Pierson. The guest speaker was Dr. Adrian van S. Lambert, New York, who discussed "The Surgical Aspects of Bronchiectasis." Dr. Joseph McFarland, Philadelphia, addressed the society, January 16, on "The Experimental and Clinical Evidence of Heredity in Malignant Disease."

DISTRICT OF COLUMBIA

Course in Aviation Ophthalmology and Aviation Medicine.—A postgraduate course in aviation ophthalmology and aviation medicine for graduates in medicine will be conducted at the George Washington University School of Medicine, Washington, April 1-6. Among the subjects covered will be:

Physiologic Problems Incident to Military and Commercial Flying.
Vision and Accommodation.
Motility of the Eye.
Stereopsis and Depth Perception.
The Fundus of the Eye.
Cardiovascular System in Aviation.
Refraction as Applied to Aviation.
Psychologic Aptitude as Applied to Aviation.
Physiologic Effects of Altitude Flying.
Fatigue.
The Human Element in Airplane Crashes.

Additional information may be obtained from the university, 1335 H Street N.W., Washington.

GEORGIA

Personal.—Dr. Henry C. Frech Jr., Savannah, has been appointed assistant director of maternal hygiene at the Chatham-Savannah health department, and Dr. Ruskin King, Savannah, assistant director of infant hygiene.——Dr. Thomas C. Davison, chief of surgical service at Grady Memorial Hospital for more than thirty years, has resigned.

Conference on Syphilis Control.—The U. S. Public Health Service called a conference, February 13-14, in Atlanta to consider problems connected with syphilis control in the Southern states, with Dr. Thomas Parran, surgeon general, presiding. States represented were Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, Missouri, Oklahoma, North Carolina, South Carolina, Tennessee, Texas, Virginia, West Virginia and the District of Columbia.

Changes in Public Health Personnel.—The state department of public health announces the following changes in personnel effective January 1: Dr. Abram J. Davis, Waynesboro, formerly commissioner of health of Burke County, has been appointed regional medical director of the East Central Health Region. Dr. Wilbur D. Lundquist, formerly of Lodi, Calif., who recently completed a course of training in public health administration, will succeed Dr. Davis as commissioner in Burke County. Dr. Oscar Emerson Ham, Atlanta, has been appointed commissioner of health of Bartow County and Dr. Charles R. Smith, Morgan, to a similar position in Calhoun County. Dr. George M. Anderson, Eastman, has resigned as commissioner of health of Dodge County. Dr. James A. Thrash, Columbus, has been appointed in charge of a combined city-county health department established in Columbus and Muscogee County.

ILLINOIS

The State Needs Physicians.—There are vacancies on the medical staffs of the state hospitals for the insane and feebleminded under the jurisdiction of the state department of public welfare. Physicians enter the service in the classification of junior physician. Requirements include legal residence in Illinois, citizenship in the United States, graduation from a class A medical school and a license to practice medicine in the state. The salary for junior position is $150 each month with full maintenance for self and family. If no civil service examination is pending, the applicant may be appointed and will be required to take the next examination for the position which is scheduled by the state civil service commission. Advancement to the higher classifications of senior physician, clinical director and assistant managing officer is provided through promotional examination. The salary range for senior physician is from $195 to $210 a month. For clinical director, the salary range is from $250 to $300 a month. Assistant managing officers in institutions with a population of less than 2,500 patients receive from $218.33 to $243.33 a month, and in institutions with more than 2,500 patients, from $243.33 to $268.33 a month. Maintenance for self and family is provided in all these positions. Opportunities for graduate training in psychiatry while employed in the state service have been provided and will be augmented when the additional wards and research facilities in the new psychiatric institute are made available in the near future. Some residencies in psychiatry are also available in the state hospitals for the insane. The salary is $52.50 a month with maintenance for self only. Applicants should communicate with Mr. A. L. Bowen, director, state department of public welfare, Springfield, for further information.

Chicago

Tri-Chapter Banquet.—Dr. William F. Braasch, Rochester, Minn., will be guest speaker at the annual Tri-Chapter banquet of Alpha Kappa Kappa Fraternity at the Chicago Athletic Club April 3. His subject will be "Future Trends in Medicine." Dr. Herman L. Kretschmer will serve as the toastmaster.

Branch to Discuss Quackery.—The next meeting of the North Shore Branch of the Chicago Medical Society will be addressed at the Sovereign Hotel, April 2, by Drs. Paul C. Barton, director, Bureau of Investigation, American Medical Association, on "Quack Remedies"; Josiah J. Moore, "Cancer Quackery," and Mr. A. M. Simons, assistant director, Bureau of Medical Economics, American Medical Association, "Medical Economic Quackery."

Society News.—The Chicago Gynecological Society was addressed, March 15, by Drs. William F. Mengert, Iowa City, on prolapse of the umbilical cord and Philip H. Smith, Evanston, Ill., on hysterectomy.——The Chicago Society of Internal

Medicine will be addressed, March 25, among others, by Dr. Ernst Gellhorn, L. Yesinick, M.S., and Chester W. Darrow, Ph.D., on "The Role of the Carotid Sinus in Experimental Convulsions."——Dr. Henry H. Kessler, Newark, N. J., among others, addressed the Chicago Orthopaedic Society, March 8, on "Amputations and Prostheses."

The Bernard Portis Fellowship.—The establishment of the Bernard Portis Research Fellowship Fund in Surgery at Michael Reese Hospital has been announced. The object of the fund, which provides $1,000 annually for a full time fellow, is to arrange research training in surgery for young men who have had basic and fundamental training in surgery. Graduates of recognized medical schools who have had internships in approved hospitals will be considered. Applicants should submit their problems in writing, together with an estimate of facilities and supplies needed, to Dr. Sidney A. Portis, secretary of the newly formed fund. Dr. Bernard Portis died Nov. 1, 1939.

INDIANA

Courses in Obstetrics and Pediatrics.—A postgraduate course in obstetrics is under way in Boone and Hendricks counties under the auspices of the county medical societies in cooperation with the bureau of maternal and child health of the state board of health. The first three meetings were held in Danville; the last three are planned for Lebanon, with the series closing April 4. Dr. Carl P. Huber, research director in obstetrics and gynecology, Indiana University School of Medicine, Indianapolis, is in charge of the course. The state medical journal announces a course in pediatrics for the general practitioner. The course opened March 20 and will continue until April 10. Details may be obtained from the postgraduate education committee of the school of medicine, Indianapolis.

KENTUCKY

Regional Meeting.—The Eastern Kentucky Medical Association held a meeting in Paintsville, February 23, under the auspices of the Johnson County Medical Society. The speakers were:

Dr. Irvin Abell, Louisville, The Bleeding Uterus.
Dr. William W. Nicholson, Louisville, Sulfapyridine in the Treatment of Pneumonia.
Dr. Ray M. Bobbitt, Huntington, W. Va., Clinical Aspects of Nephroptosis.
Dr. Edwin J. Humphrey Jr., Huntington, Studies in Sterility.
Dr. John M. Emmett, Clifton Forge, Va., Symptoms and Treatment of Goiters in General.
Dr. Arthur T. McCormack, Louisville, We Doctors.

MICHIGAN

Physician Honored on Retirement from Hospital.—A dinner was held in the University Club, February 10, to honor Dr. Robert T. Tapert, who has retired as chief of staff of the Deaconess Hospital, Detroit, after holding the position for twenty-one years. A portrait of Dr. Tapert, painted by Roy C. Gamble, was presented by Dr. Rudolph L. Pfeiffer, chief of staff, and accepted on behalf of the hospital by Dr. John L. Ernst, superintendent; it will be hung in the hospital. Malcolm W. Bingay, editorial director of the Detroit *Free Press*, was toastmaster at the dinner. Dr. Tapert will continue in private practice.

Tri-State Medical Association.—The sixty-seventh annual meeting of the Northern Tri-State Medical Association will be held in Battle Creek, April 9. The following will speak:

Dr. George J. Curry, Flint, Management of Long Bone Fractures.
Carl J. Klemme, Ph.D., West Lafayette, Ind., Relationship Between Sterols, Cardiac Poisons, Vitamin D, and Sex Hormones.
Dr. David Slight, Chicago, Migraine.
Dr. Thomas E. Jones, Cleveland, Diverticulitis of the Colon.
Dr. Louis J. Hirschman, Detroit, Fistula-in-Ano—Its Present-Day Treatment.
Dr. Vincent J. O'Conor, Chicago, Prostatic Diseases.
Dr. Fred L. Adair, Chicago, Pyelitis and Pregnancy.
Dr. James B. Costen, St. Louis, Neuralgias and Trismus Resulting from Mandibular Joint Disturbance.

The banquet at Battle Creek Sanatorium will be addressed by Dr. Walter C. Alvarez, Rochester, Minn., on "The Patient Who Is Always Ailing in Spite of Many Treatments."

Society News.—Ernest Fullerton Cook, Pharm.M., Philadelphia, discussed "Notable Developments in the Pharmacopeial Program" before the Detroit Retail Druggists' Association and the Wayne County Medical Society, Detroit, February 19. A general meeting of the county medical society was addressed, March 4, by Dr. Madge Thurlow Macklin, London, Ont., on "The Role of Inheritance in Cancer in Man, and Its Practical Applications."——Dr. Donald C. Beaver addressed the Highland Park Physicians' Club in Detroit, February 1, on "Pathology of Jaundice."——At a meeting of the Detroit Academy of Surgery, February 8, Dr. James Spencer Speed, Memphis, Tenn., spoke on "Treatment of Fractures by Internal Fixation." The meeting was called the "Frank B. Walker Memorial Meeting" in honor of the academy's second president, whose career was reviewed by Dr. Alexander W. Blain.——Dr. Henry Allen Moyer, state commissioner of health, Lansing, discussed preventive medicine before the Muskegon County Medical Society, Muskegon, February 16.——Dr. F. Janney Smith, Detroit, discussed pneumonia before the Jackson County Medical Society, Jackson, February 20.

NEBRASKA

Professor of Ophthalmology Appointed.—Dr. Louis B. Bushman, professor and director of the department of ophthalmology at Creighton University School of Medicine, Omaha, has been made professor emeritus and Dr. Charles M. Swab, associate professor, has been appointed to succeed him, according to the *Nebraska State Medical Journal*. Dr. Bushman graduated from Creighton University School of Medicine in 1903 and has been a member of the faculty since 1906 and professor of ophthalmology since 1919. Dr. Swab graduated from Creighton in 1916.

Society News.—Drs. Alan R. Moritz, Boston, and Sumner L. S. Koch, Chicago, addressed the Omaha-Douglas County Medical Society, Omaha, February 27, on "Medicine and the Administration of Justice" and "Management of Surgical Wounds" respectively.——Drs. George W. Covey and George H. Misko, Lincoln, addressed the Lancaster County Medical Society, Lincoln, February 6, on "The Cyanates in Arterial Hypertension" and "Fever Therapy" respectively.——Speakers at a meeting of the Five-County Medical Society in Wayne, February 6, were Drs. Lucien Stark and Albert J. Schwedhelm, Norfolk, on "Rheumatic Heart Disease" and "Cancer of the Rectum and Sigmoid" respectively.

NEW JERSEY

Course on Allergy.—A series of lectures on allergy is being presented by the Bergen County Medical Society at Teaneck. Dr. Marion B. Sulzberger gave the first lecture, March 7, on "Treatment of Eczema in General Practice"; Dr. Robert Chobot, March 14, "Management of the Allergic Child" and Dr. Russell C. Grove, March 21, "Importance of Nose and Throat Infection in the Treatment of Asthma." Coming lectures will be:

Dr. William C. Spain, March 28, The Skin Sensitive Type of Asthma.
Dr. Albert Vander Veer, April 4, Hay Fever.
Dr. Matthew Walzer, April 11, Food Allergy.

All the speakers are from New York.

Society News.—A symposium on obstetrics was presented at a meeting of the Bergen County Medical Society in Teaneck, March 12, by the following speakers, all of Brooklyn: Drs. Harvey B. Matthews, who discussed "Indication for Forceps"; Henry S. Acken Jr., "Indications for Cesarean Section"; Martin Z. Glynn, "Postpartum Hemorrhage," and Willard G. French, "Treatment of Eclampsia."——Dr. Frank E. Adair, New York, addressed the Atlantic County Medical Society, Atlantic City, March 8, on therapy of breast conditions.——Dr. George Harlan Wells, Philadelphia, addressed the Gloucester County Medical Society, Woodbury, March 21, on "Causes and Treatment of Congestive Heart Failure."

NEW YORK

Society News.—Dr. Robert T. Frank, New York, addressed the Nassau County Medical Society, Garden City, February 27, on "Endocrinology in the Female."——Drs. Samuel A. Thompson and Milton J. Raisbeck, New York, discussed operative and medical management, respectively, of "Surgical Treatment of Coronary Disease."——The winter meeting of the Madison County Medical Society was held in Oneida, January 18, with the following speakers, all of Syracuse: Drs. Sydney W. Stringer, on "The Vaginal Discharge"; Leon E. Sutton, "Early Local Care of Traumatic Wounds, with Special Reference to Wounds of the Face," and Earle E. J. Mack, "Vitamin Deficiencies."——Dr. Israel Davidsohn, Chicago, addressed the Buffalo Academy of Medicine, February 28, on "Infectious Mononucleosis."——Dr. Orren D. Chapman addressed the Syracuse Academy of Medicine at a joint meeting with Alpha Omega Alpha, March 19, on "Oral Infection with Special Consideration of Fusospirochetal Disease."

New York City

Medicomilitary Meetings.—The Medical Executive of the Second Military Area, U. S. Army, sponsored a meeting for Medical Department reserve officers, March 4, at the Federal Building with the following speakers: Lt. Col. Orville E. McKim, Veterinary Reserve, on "Veterinary Food Inspection; Its Importance and Responsibility"; Lt. Col. William A. Hardenbergh, Sanitary Reserve, "Sanitation in the Field," and Lt. Col. Robert K. Simpson, Medical Corps, in charge of aviation medicine at Mitchel Field, L. I., "Physical Examination of Applicants for Appointment as Flying Cadet, U. S. Air Corps." Each speaker arranged an exhibit in addition to his address. A dinner will be held Saturday evening, April 6, at the Town Hall Club, with Col. Frank W. Weed, surgeon, Second Corps Area, as the guest of honor. Col. John L. Kantor, Medical Reserve Corps, will serve as toastmaster.

Prize Awarded to Dr. Sawyer.—The Léon Bernard Prize of a bronze medal and 1,000 Swiss francs, established by the Health Committee of the League of Nations, was awarded for the first time, January 29, to Dr. Wilbur A. Sawyer, director of the International Health Division of the Rockefeller Foundation. The presentation was made by Dr. Hugh S. Cumming, former surgeon general of the U. S. Public Health Service, at a dinner of the League of Nations Association in New York as a tribute to Dr. Sawyer's achievements in control of yellow fever and to his success in extending medicosocial protection to the populations of many countries, according to *Science*. The award was created by the Health Committee in memory of Professor Bernard, a prominent member who died in 1934, to reward practical achievements in the field of social medicine. Professor Bernard was for many years general secretary of the International Union Against Tuberculosis.

NORTH CAROLINA

New Mental Hygiene Appointments.—Dr. James Watson, recently a member of the staff of the Worcester State Hospital, Worcester, Mass., has been appointed director of the mental hygiene division of the state board of charities and public welfare. Dr. Watson graduated from Northwestern University Medical School, Chicago, in 1925 and spent several years as medical superintendent of the Ryder Memorial Hospital, Humacao, Puerto Rico. Later he was on the staff of the Elgin State Hospital, Elgin, Ill. Dr. Richard F. Richie, formerly of Lincoln, Neb., has been appointed assistant director of the division in charge of the children's unit, according to the *North Carolina Medical Journal*.

Society News.—Dr. Claude N. Burton addressed the Buncombe County Medical Society, Asheville, February 19, on panhysterectomy.——Dr. Foster Kennedy, New York, addressed a joint meeting of the Forsyth and Guilford county medical societies in Winston-Salem, recently, on "The Organic Background of Mind."——At a meeting of the Catawba Valley Medical Society, Lincolnton, March 14, the speakers were Drs. Allison L. Ormand Jr., Black Mountain, on "Early Diagnosis of Pulmonary Tuberculosis"; Samuel A. Wilson, Lincolnton, "Use of Silver Picrate in the Treatment of Gonorrhea," and Cyrus L. Walton, Glen Alpine, "Treatment of Rheumatism and Arthritis by the General Practitioner."

PENNSYLVANIA

New Members of State Medical Board.—Gov. Arthur H. James recently appointed the following new members of the state board of medical education and licensure: Dr. John E. James, Philadelphia, to succeed Dr. George Willis Hartman, Harrisburg; Dr. Charles L. Shafer, Kingston, to succeed Dr. William C. Bryant, Pittsburgh, and Dr. Charles J. Hemminger, Somerset, to succeed Dr. Domer S. Newill, Connellsville. Dr. Irvin D. Metzger, Pittsburgh, was reappointed.

Philadelphia

Campaign for $4,000,000.—Philadelphia opened its 1940 campaign for funds for charitable agencies February 26. The annual effort, formerly called the United Campaign, is now known as the United Charities Campaign. The 137 organizations for which support is sought include twenty-one hospitals, twenty-one health groups, eight associations for rehabilitation of families, twenty-two for assistance to families and forty-two for youth training and development. A budget of four million dollars is the objective for this year.

Auxiliary Sponsors Health Institute.—The Woman's Auxiliary of the Philadelphia County Medical Society will present its tenth annual health institute at the society's building April 9. Included in the program will be the following speakers:

Dr. Baldwin L. Keyes, Environment and the Child.
Dr. Burgess L. Gordon, Results of Education in Environment.
Dr. Stanley P. Reimann, Heredity and Disease.
Dr. Joseph C. Yaskin, Neuropsychiatry and Heredity.
Dr. Percy S. Pelouze, Education and the Social Diseases.
Dr. Charles Francis Long, Education for Industrial Health.
Dr. Dorothy Case Blechschmidt, Health Education and the Youth.
Mrs. Augustus H. Kech, field director, health education, state health department, Health Programs in Pennsylvania.

Society News.—Speakers at a meeting of the Philadelphia Roentgen Ray Society, March 7, were Drs. Howard H. Bradshaw, on "Surgical Aspects of Bronchogenic Carcinoma"; Herman W. Ostrum, "Roentgen Diagnosis of Pulmonary Malignancy," and Bernard P. Widmann, "Roentgen Therapy for Pulmonary Malignancy."——Dr. Robert D. Dripps Jr. and Martin Larrabee, Ph.D., among others, addressed the Philadelphia Neurological Society, February 23, on "Electrical Activity of the Cortex and Cortical Blood Flow Changes Induced by Metrazol and Other Exciting Agents."——Dr. Leandro M. Tocantins, among others, addressed the Philadelphia Urological Society, February 26, on "Hypoprothrombinemia and the Clinical Use of Synthetic Vitamin K Substitute."

Pittsburgh

Fourth Renziehausen Lecture.—Dr. Frederick M. Allen, New York, will deliver the fourth Renziehausen Memorial Lecture, April 2, at the Mellon Institute on "The Treatment of Diabetes."

Society News.—At a meeting of the Allegheny County Medical Society, March 19, the speakers were Drs. Joseph S. Baird on "Allergic Reactions in Modern Diphtheria and Scarlet Fever Antitoxin Therapy"; Henry J. Benz, "After Seventeen Years of Diphtheria Prevention"; Philip E. Marks, "Private Physician and Public Health"; George E. Martin, "Trend of Tuberculosis in Pittsburgh," and Mr. Thomas G. English, "The Purity of Water and How to Keep It That Way."

UTAH

Annual Registration Due April 1.—All practitioners of medicine and surgery licensed to practice in Utah are required to register annually on or before April 1 with the Department of Registration and to pay a fee of $3. If a licentiate fails to reregister within from ninety days to six months after April 1, his license can be revoked, and if revoked, it will be reinstated thereafter only on his paying the delinquent registration fees and an additional year's fee as a penalty.

WYOMING

Annual Registration Due April 1.—All practitioners of medicine and surgery licensed to practice in Wyoming are required by law to register on or before April 1 with the secretary of the Board of Medical Examiners and to pay a fee of $2.50. If a licentiate fails to pay the fee within three months after April 1, his license can be annulled and, if annulled, it will be reinstated only on his paying the stated fee, plus $5 as a penalty.

GENERAL

Annual Cancer Control Campaign.—The American Society for the Control of Cancer through the units of the Women's Field Army will conduct its fourth annual campaign of cancer education during April. It is expected that, as in previous years, President Roosevelt will issue a proclamation directing attention to the need to "Fight Cancer with Knowledge." Organized four years ago, the Women's Field Army now has divisions in forty-six states, with cancer information centers in more than half the counties in the country.

Grants Available from Plotz Foundation.—Applications for grants from the Ella Sachs Plotz Foundation for use during 1940-1941 must be in the hands of the executive committee before April. The maximum size of the grants will usually be less than $500. According to the trustees of the fund, researches will be favored that are directed toward the solution of problems in medicine and surgery or in branches of science bearing on medicine and surgery. It was the original policy of the foundation to give preference to researches on a single problem or on closely allied problems, but during the present great need for funds grants will be given in the sciences closely related to medicine without reference to special fields. Grants may be used for the purchase of apparatus and supplies that are needed for special investigations and for the payment of unusual expenses incident to such investigations, including technical assistance, but not for providing apparatus

or materials which are ordinarily a part of laboratory equipment. Thirty-two grants were made during the past year. There are no formal application blanks, but letters asking for aid must state definitely the qualifications of the investigator, an accurate description of the research, the size of the grant requested and the specific use of the money to be expended. In their requests, applicants should state whether they have approached other foundations for financial assistance. It is highly desirable to include letters of recommendation from the directors of the departments in which the work is to be done. Applications should be sent to Dr. Joseph C. Aub, Collis P. Huntington Memorial Hospital, 695 Huntington Avenue, Boston.

Society of Clinical Surgery. — The Society of Clinical Surgery will hold its sixty-eighth meeting in Nashville, Tenn., April 14-15, at Vanderbilt University Hospital. Among the presentations to be given in the amphitheater of the hospital are the following:

Dr. Daniel C. Elkin, Atlanta, Ga., Wound Healing.
Dr. John C. Burch, Nashville, Experimental Studies in Menstrual Disorders.
Dr. Hugh J. Morgan, Nashville, Results of Treatment of Pneumonia with Sulfapyridine.
Ann Minot, Ph.D., Nashville, Problems of the Administration of Fluids in Burns.
Dr. John B. Youmans, Nashville, Deficiency Diseases.
Dr. Rollin A. Daniel Jr., Nashville, Acute Abdominal Manifestations of Malaria.
Dr. Thomas E. Wyatt Jr., Nashville, Experiences in Thyroid Surgery in the Vanderbilt University Hospital.
Dr. Alfred Blalock, Nashville, Demonstration of Patients Treated for Constrictive Pericarditis.
Dr. Barney Brooks, Nashville, Resection of the Stomach for Benign Lesions.

Dr. Albert Szent-Györgyi, director of the Institute for Medical Chemistry and professor of medical chemistry, Royal Hungarian Franz Joseph University, Szeged, Hungary, who is this year's Flexner Lecturer at Vanderbilt, will speak Friday afternoon on "Biochemical Aspects of Vitamin Therapy." Dr. Samuel C. Harvey, New Haven, Conn., is president of the society.

Prizes for Scientific Research.—In answer to a request, the following list of prizes offered for medical research has been prepared from notices that have appeared in THE JOURNAL:

Foundation Prize, $150, offered by the American Association of Obstetricians, Gynecologists and Abdominal Surgeons. Information from Dr. James R. Bloss, 418 Eleventh Street, Huntington, W. Va.

Van Meter Prize, $300 and two honorable mentions, offered by the American Association for the Study of Goiter. Information from Dr. W. Blair Mosser, 133 Biddle Street, Kane, Pa.

Award for research in endocrinology, $1,000, E. R. Squibb & Sons, to be awarded by the Association for the Study of Internal Secretions. Information from Dr. E. Kost Shelton, 921 Westwood Boulevard, Los Angeles.

Medal in ophthalmology, offered by the University of Buffalo. Information from Dr. Harold W. Cowper, 543 Franklin Street, Buffalo.

Francis Amory Prize, $10,000, offered by the American Academy of Arts and Sciences. Information from the academy, 28 Newbury Street, Boston.

Pediatric awards, two of $500 each offered by Mead Johnson & Co. through the American Academy of Pediatrics. Information from Dr. Borden S. Veeder, 3720 Washington Boulevard, St. Louis.

Prize in ophthalmology, $100 offered by the Association for Research in Ophthalmology. Information from Dr. Cecil S. O'Brien, University Hospitals, Iowa City.

Prize for research on the vitamin B complex, $1,000 given by Mead Johnson & Co. through the American Institute of Nutrition. Information from Leonard A. Maynard, Ph.D., Cornell University, Ithaca, N. Y.

Prize in thoracic surgery, $250 offered by the Rose Lampert Graff Foundation of Los Angeles through the American Association for Thoracic Surgery. Information from Dr. Richard H. Meade Jr., 2116 Pine Street, Philadelphia.

Alvarenga Prize, awarded by the College of Physicians of Philadelphia. Information from Dr. J. Harold Austin, College of Physicians, 19 South Twenty-Second Street, Philadelphia.

Casselberry Prize, awarded for research in laryngology and rhinology. Information from Dr. James A. Babbitt, 1912 Spruce Street, Philadelphia.

Wellcome Prize, $500, offered by the Association of Military Surgeons of the United States. Information from the secretary of the association, Army Medical Center, Washington, D. C.

Léon Bernard Prize, 2,500 French francs offered by the International Union Against Tuberculosis. Information from the National Tuberculosis Association, 50 West Fiftieth Street, New York.

Award for research on encephalitis lethargica, 1,000 Swiss francs, offered by the University of Berne, Switzerland. Information from the Dean of the Medical Faculty.

Umberto I Prize offered by the Rizzoli Orthopedic Institute of Bologna, Italy. Information from the president of the institute.

CORRECTIONS

"Kaba" Instead of "Karaba."—In Dr. Karl D. Figley's article on "Karaya Gum (Indian Gum) Hypersensitivity" in THE JOURNAL, March 2, page 747, in table 1, instead of "Karaba" made by the Battle Creek Sanitarium, the laxative should have been listed as "Kaba" distributed by the Battle Creek Food Company.

Cardiac Emergencies—Dosage of Aminophyllin. — In Dr. J. A. Lyon's article on cardiac emergencies in THE JOURNAL, March 9, page 837, column two, line two, the dosage of aminophyllin for intravenous administration is given as 1/100 grain. The correct dosage for intravenous administration of aminophyllin is 7½ grains (0.48 Gm.).

Subacute Yellow Atrophy of the Liver Due to "Solvent."—In the clinical note by Dr. Leo E. Braunstein, Schenectady, N. Y., in THE JOURNAL, January 13, the figure for the level of urea nitrogen in the middle of the first column on page 138 should have read 14 mg. instead of 114.

Government Services

Health of the Navy

Motor vehicle accidents were the leading cause of death in the U. S. Navy during the calendar year 1938, as they have been every year since 1930, except 1933, according to the annual report of the Bureau of Medicine and Surgery. There were fifty-four deaths from motor vehicle accidents and thirty-three from drowning, formerly the principal cause of death. There were 362 deaths from all causes, giving a rate of 2.6 per thousand. This rate is 31 per cent lower than the nine year median rate (3.78 per thousand).

There has been a general progressive decrease in the admission rate for the past ten years. In 1938 there were 54,810 new admissions from all causes, giving a rate of 393.7 per thousand as compared with a nine year median of 520.61. Wounds and injuries were responsible for 7,118 new admissions, a decrease of 4.76 per cent from 1937. The average number of sick days was 8.33 per person. There were 1,474 persons invalided from the service. There were no disasters in 1938, but the report mentions the sinking of the submarine *Squalus* in May 1939, in which twenty-three enlisted men and one officer lost their lives.

On June 30, 1939, the medical corps of the navy numbered 841 medical officers, 255 dental officers, 132 chief pharmacists and pharmacists, 440 in the nurse corps and 4,375 in the hospital corps.

Expansion in the navy has increased the work of the bureau, and additional civilian employees are needed, the report said. The division of physical qualifications and medical records prepared 22,881 transcripts of medical records during the fiscal year, among other activities. This division is the repository for the medical department's journals, many of which need reconditioning, it was said.

During the fiscal year, a class of twenty-four medical officers completed the basic course at the Naval Medical School and twenty dental officers the course at the Naval Dental School. The medical personnel took a total of sixty-nine courses of instruction at various institutions.

Increasing emphasis is being placed on research, the report said. Plans are now being made to provide a research laboratory and to train additional personnel for continuous investigation of naval problems. The section of atmospheric hygiene has been especially concerned with the objective of supplying naval constructors with quantitative physiologic data relative to ventilation requirements for naval personnel.

The rescue and salvage work on the *Squalus* afforded a crucial test of laboratory knowledge and the results of experimental diving previously conducted by an experimental unit. More than 200 successful dives to a depth of 240 feet were made without injury to the divers.

With expansion of the naval air forces, there has been an increased demand for naval flight surgeons. Eight medical officers completed the basic course in aviation medicine during the fiscal year and five are assigned for the current year. In addition, training of selected medical reserve officers has been continued. It is the policy to recommend all reserve medical officers on duty at naval reserve aviation bases, or eye, ear, nose and throat specialists, for the correspondence course in aviation medicine. After this course is completed and after a period of practical instruction at an air station these officers are designated as qualified examiners.

Measures have been taken to extend research on the physiologic problems of naval aviation at the naval air station at Pensacola. A plan now being tried experimentally at Pensacola is radio communication between planes and ambulances for direction and guidance to the scene of a crash in outlying districts.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Feb. 17, 1940.

The Australian Expeditionary Force

The medical arrangements of the Australian Expeditionary Force, which has arrived at Suez, seem to be as complete as those of the home army. Before leaving Australia the whole force was roentgenographed for signs of tuberculosis and the blood group of every man was recorded in his pay book and inscribed on his identity disk, so that if severely wounded he could be transfused with minimum loss of time. Blood of the four groups will be available to surgeons of the Australian Army Medical Corps in mobile blood banks with refrigerators in which it can be stored and transported to advanced dressing stations. The medical corps believes that the expeditionary force will be the first of the allied armies to have the blood group of every soldier classified in advance. In the last war, when transfusions were required at advanced dressing stations the blood group had to be determined and search made among the walking wounded for a man of blood of the same group to act as a donor. Such men were seldom in first class physical condition after having lost blood themselves and spent long periods in the trenches. It is curious that just as the Australian system of blood grouping of every soldier has been published, an anonymous "layman" has written to the *British Medical Journal* advocating it. He has gone further and under the caption "Blood Grouping for All" recommended that civilians should also be grouped. He is certainly right, as the danger of civilian casualties on a large scale from air raids still exists.

Scheme for Evacuation of Children

The evacuation of children on a large scale from the cities in danger of attack by air has been described in previous letters. Though carried out by the government, this evacuation was entirely voluntary. As no attacks have occurred after more than five months of war many parents have brought their children back, though against the advice of the government, which remains convinced of the desirability of dispersal. Plans have therefore been prepared with the object of retaining in the reception areas as many as possible of the 400,000 children who are still there and of providing for a further large scale evacuation to take place if air raids develop on a scale involving serious and continuous bombing. These plans will apply to school children only—not to adults—and will be voluntary. But parents who register for evacuation will be required to sign an undertaking that they will send their children away when evacuation is ordered and that they will leave them in the reception areas until the school parties return. The provision of sick bays and hostels for difficult children and for those who are unsuitable for billeting in private houses will continue to be developed.

The Hands of Famous Surgeons

In the Museum of the Royal College of Surgeons is a case containing casts or drawings of the hands of famous surgeons. It seems natural that hands of the great operator should be finely formed with long sensitive and flexible fingers, but this is not always borne out by observation. In an article published in the *Lancet*, Mr. C. J. S. Thompson, curator of the historical collection of the museum, quotes Lanfranc, who brought Italian surgery to France in the thirteenth century. Himself a great operator, he said "A surgian must have handes wel-shaped, long small fingers & his body not quakyng & all must be of subtle wit." But close observation of the hands of many famous operators attending international congresses brought disillusionment to Mr. Thompson. Instead of sensitive and tapering fingers with a finely formed palm, the majority did not correspond to his preconceived idea of what a surgeon's hand should be. Many of the hands were large and clumsy, with thick short fingers and spatulate tips.

Thompson discussed his view of surgeons' hands with Harvey Cushing, who said, with his whimsical smile, "I quite agree. From my observations I concluded that most of them were unspeakably awkward appendages." Cushing made a collection of casts of surgeons' hands, which is deposited in the museum of the Harvard Medical School. It includes the hands of W. W. Keen, W. J. Mayo, G. W. Crile, W. P. Graves, Putti and Bastianelli. The collection in the museum of the Royal College of Surgeons includes the hands of Syme, Lister, Mayo Robson, Moynihan and Harvey Cushing. The last presented the casts by request a short time before his death. It is interesting to compare his hands with those of Syme, another great operator. Cushing's hands are characteristic of the man. The fingers are small and short with broad tips but are well spaced. On the contrary, Symes's fingers are slender and tapering. His hand measures 9 inches in length, while Cushing's measures only 7½ inches.

Mustard Gas Injuries of the Eye

At the Section of Ophthalmology of the Royal Society of Medicine a discussion took place on gas injuries of the eye. Mr. M. H. Whiting stated that in the late war mustard gas was first used by the Germans in July 1917 and in that year over 52,000 gas casualties were produced. In 75 per cent there was little or no corneal involvement, in 15 per cent moderate involvement with slightly roughened cornea and in 10 per cent severe involvement with stained cornea. The first group was fit for duty in from one to four weeks, the second in from four to six weeks and many of the third group required long periods of treatment. The pathologic changes were denudation of corneal epithelium with flattening of the remaining cells.

Mr. R. E. Bickerton said that mustard gas caused pain and destruction of the corneal epithelium, laying bare Bowman's membrane, which rapidly softened and offered little protection to the lamellae of the cornea between which the gas in solution percolated. Keratitis ended in keratomalacia. These changes occurred in the lower third of the cornea, where the tears formed a liquid solution of the gas.

Mr. Lindsay Rea stated that the Germans suffered greatly from mustard gas in the war. In a translation of their official book obtained in 1918 they advocated the use of an alkaline ointment applied immediately. Now they recommend cod liver oil made alkaline with some dextrose added. Another treatment was the use of 800 parts of saturated magnesium sulfate and 200 parts of syrup of sugar, which had been used for many years in India and in the lock hospitals of London for acute blennorrhea. But all treatment could only ameliorate the condition if it was neglected for the first twenty-four hours. At present no treatment was recommended which the patient could himself apply. He might be lying in a gas-saturated shell hole for hours. A small tube of hydrous wool fat ointment or boric acid ointment could be easily carried and left for the patient to apply until some skilled treatment was available.

The Influenza Epidemic

An epidemic of influenza of mild type is prevalent. The number of cases cannot be stated, as the disease is not notifiable. But the number of deaths ascribed to influenza in the large cities of England and Wales (which include over half of the total population) reported in the six weeks ended February 3 were successively forty-six, ninety-four, 158, 291, 416 and 350. These figures are higher than the normal for this time of year, but the age distribution of the deaths is of the normal type. Thus the greater numbers suggest greater prevalence rather than unusual severity.

PARIS

(From Our Regular Correspondent)

Feb. 4, 1940.

French Evacuation Centers

Confronted with a pitiless war waged alike against armed forces and civilian populations, the clear duty of the government was to evacuate many urban centers of their inhabitants. However, evacuation within the war zone, one of the most densely peopled sections of France, was no less necessary. Here more than 700,000 persons had to be removed. If one adds to these the numerous families, which for different reasons throughout the country have abandoned the towns for the country, and the 5,000,000 mobilized men and women, the grand total reaches at the lowest estimate 6,000,000 individuals of every age and of both sexes that had to be transported, fed, and medically and morally supervised within a short time. There is no parallel in history of a similar enterprise. The problems attending these enormous and rapid migrations had been anticipated in peace time, but while the purely military problems have received a satisfactory solution the needs of evacuated civilians are far from solved. In three months much has been done for the health service of these "refugees," of whom two thirds are women and children. Only twenty-three departments of the Southwest and West, generally agricultural, were available to harbor the evacuated millions, and, while the requisitions had all been made, no preparations had been instituted for the actual housing. However, the state department of health set up necessary health services, such as maternity and child welfare stations directed by Drs. Couvelaire and Lesne, antivenereal stations directed by Dr. Lévy Bing, cancer control stations under Dr. Roussy, and tuberculosis control stations under Dr. Besançon. Many of the sanatoriums had been requisitioned by the army and their inmates released. They had to be sought out and placed in other sanatoriums. In centers until then reserved for disease detection and prophylaxis, centers had to be organized for the handling of pneumothorax cases. Tuberculin tests for children were systematically carried out. The arrival of winter introduced a great privation, since children had to be bedded for weeks on straw mattresses and there was a shortage of bed covers.

The Faculty of the University of Strasbourg was installed at Périgueux, continuing its tasks and instruction and charged with the health supervision of the "refugees" from Alsace-Lorraine. There was a shortage of physicians, as the youngest and most active had been mobilized. The need was sought to be supplied in part by army physicians, without stinting the priority of claims of the soldiers. The "refugees" were also placed on the lists of free medical aid.

No epidemics and no abnormal morbidity or mortality have been observed either among the evacuated or in the civilian population. Of course, the conditions are not ideal. Nothing has been done, for example, for sports and leisure time activities or for the constructive occupations of the young people, who are idle and receive no vocational training. Winter has also increased the problems. Much needs still to be done.

The Art of Healing

Aubertin, on assuming the chair of therapeutics at the Faculty of Medicine of Paris early in January, delivered the opening lecture in accordance with tradition. This requires, among other things, an exposition of the views of the incumbent in relation to his professional functions. Aubertin pointed out the intimate connections between the healing art and the clinic. The causes of error that occasionally developed skepticism arose principally from individual cases. However, the objective controls of chemistry, histology, bacteriology and especially the graphic aids throw light on the mechanism of therapeutics and pharmacodynamics. Aubertin conceived the teacher of therapeutics as a man of a youthful, curious, open, forward looking mind, continuously testing new drugs and stressing the actual achievements of medical science against the discouragements that skeptical moods might inspire.

AUSTRALIA

(From Our Regular Correspondent)

Feb. 13, 1940.

Social Medicine in New Zealand

The dominion of New Zealand, with just over one million people, is giving the world an interesting experiment in "socialized" or state controlled medicine. The state, through its department of health, controls almost every function demanded of a public health service. In addition to matters of environmental sanitation (water and food supplies, housing, nuisance abatement, methods of disposal of refuse and sewage) the department is concerned with the investigation and control of infectious diseases, with maternity and child welfare service, with school medical and dental services and with hospital services public and private. It is also associated with the work of boards controlling the medical and dental professions, and it takes an even more active part in the work of boards responsible for the training, registration and control of nurses, midwives, maternity nurses, masseurs and opticians; and it is interested in medical research.

The most noteworthy feature of the system concerns the administration of the social security act of 1938. This makes provision for medical and hospital treatment and for "such other benefits as may be necessary to maintain and promote the health and general welfare of the community." The principal classes of benefits provided comprise medical, pharmaceutic, hospital and maternity benefits. Supplementary benefits contemplated include specialist and consultant services, radiologic and laboratory services, home nursing and domestic assistance, and dental services. Hospital and maternity benefits are now in operation. Benefits are available to all persons ordinarily resident in New Zealand without regard to race, nationality or economic status, the main object of this legislation being to ensure that in the treatment of the sick the economic circumstances of the individual patient will cease to be a consideration either from the point of view of the patients or from the point of view of those actually rendering service.

A special division of the department undertakes the dental treatment of school children. It is staffed by dental surgeons who are responsible for the administrative and instructional side and by dental nurses specially trained by the department, who undertake the actual treatment. The work is concentrated on children whose ages are from 5 to 8 years. The attendance of children under school age, however, is encouraged. Three hundred and twenty-four clinics have been established. Each clinic deals with children of certain schools in the vicinity, and these are organized into a "dental group" the local administration of which is in the hands of a dental clinic committee composed of local residents. Besides undertaking various duties in connection with local administration, these committees have to undertake the task of raising funds to meet a certain proportion of the cost of operating the clinics. Treatment of the children in the clinics is carried out by the school dental nurses. There are some 1,600 schools linked up with this service and 94,000 children are now under dental supervision.

Camps for undernourished children are established throughout the dominion. A national health camp federation has been formed to deal with the extension of existing camps. Any one can nominate a child for admission to a camp but the child must be seen and recommended by a medical practitioner before he is admitted. Funds to finance these camps are raised by local charities, national art unions and from Christmas health stamps,

which are annually on sale at all post offices from the beginning of October at a surcharge of a penny on ordinary postage rates. These camps have amply demonstrated the good which can be done to children by a simple regimen permitting adequate rest, fresh air, sunshine and proper feeding.

The object of the milk in schools scheme is to make available to all school children in the dominion a half pint of pasteurized bottled milk on each school day. The milk is provided free of cost to the children, and the acceptance of the milk by the child is entirely voluntary. Two alternative schemes, the supply of malted milk powder or the supply of milk for cocoa-making purposes, are offered to schools when it is found impracticable to extend the pasteurized bottled milk supply owing to areas of isolation and scattered school population presenting insuperable difficulties. The scheme has progressed to a point where milk is now available to some 220,000 children. Medical and educational authorities testify to the good effect on the children of the scheme.

New Zealand is in an unenviable position as regards the incidence of hydatid disease. For years an intensive educational campaign has been waged against it. In 1938 a step forward was taken by passing legislation making it compulsory for all dog owners to purchase from the local authorities an approved remedy for tapeworm in dogs at the time of registration. Printed instructions regarding the administration of the remedy and advice as to the methods of preventing hydatid disease are issued with the remedy. During 1938 some 375,000 vials, each containing four tablets of one-fourth grain (0.016 Gm.) of arecoline hydrobromide were supplied to local authorities for distribution to dog owners.

BELGIUM

(From Our Regular Correspondent)

Feb. 2, 1940.

Specialists in Hygiene

By a royal decree the instruction qualifying for the practice of hygiene has been reorganized. Prerequisite to admission to the examinations is a doctor's degree in medicine, surgery and obstetrics and at least a year of intensive training subsequent to the medical training. The examination covers four fields:

Group A. Public Hygiene. This includes (1) the hygiene of dwelling places, towns and the relation of the atmosphere and sunshine to hygiene, (2) the composition, changes and adulterations of foods including drinking water and residuary waters, (3) prophylaxis against communicable diseases including the bacteriologic analysis of beverages and foods, (4) school hygiene including the elements of biology and physical education, (5) general statistics, (6) legislation and organization pertaining to sanitation, (7) toxicology and (8) tropical medicine.

Group B. Social Hygiene. This group includes (1) social medicine including knowledge of health legislation, (2) infant hygiene, (3) occupational hygiene under the law, (4) hygiene of foods, (5) school hygiene, (6) general statistics, (7) mental hygiene, (8) the prophylaxis of communicable diseases, (9) the physiology of work, biometry and occupational orientation, and (10) prevention of other social evils (pauperism, prostitution, vagabondage). The instruction offered in this group must be completed by practical stages in a medicosocial institution.

Group C. Occupational Hygiene. This includes (1) the physiology of work, biometry, occupational orientation, (2) industrial technology, (3) legal aspects of work accidents and occupational diseases and the determination and evaluation of invalidism, (4) industrial and occupational hygiene and legislation, (5) toxicology, (6) hygiene of the atmosphere, sunshine, dwelling places and towns, (7) prophylaxis against communicable diseases, (8) protection of workers under the law, (9) medical statistics of workers and (10) general statistics.

Group D. School Hygiene and Physical Education. Under this head are included (1) the theory of physical education, (2) the analysis of motions, (3) the biology of physical education, (4) infant adolescent and adult biometry, (5) knowledge of the biology of physical education, and (6) school hygiene (advanced) covering supplementary knowledge of the diseases of school children, knowledge of experimental psychology, elements of methodology, legislation and general statistics.

Treatment of Gonorrhea at Public Expense

In fear of a recrudescence of venereal diseases, new regulations have been formulated for the maintenance of public health. No such effective control existed in the past for gonorrhea as was available for syphilis. The government had not been remiss in its fight against gonorrhea but the absence of a specific remedy and the deceptive results obtained led to the abandonment of public measures. Since then, sulfanilamide has led to a revival of governmental control. It has been decided to accept indigent gonorrheal patients for treatment at the expense of the state in clinics, polyclinics and dispensaries approved by the state. The institutions approved obligate themselves (1) to make no charge whatever and to assure the fullest secrecy to indigent men and women, (2) to keep a medicosocial file, (3) to conduct consultations with dignity (questions asked and physical examinations made may not take place in the presence of a third person), (4) to accept the supervision of the state department of health, (5) to submit statistical reports every three months and prepare an annual report, and (6) to procure their medicaments from accredited druggists. The department of public health will participate in the expense incurred by institutions on the approved list.

Occupational Diseases of Engravers

Uytdenhoef discussed, before the Belgian association of social medicine, the work conditions of 270 workers and the occupational diseases to which they are exposed in engraving, photogravure, lithography and other branches of printing. The diseases observed, he said, spring principally from three causes: the effect of radiation proceeding from electric arcs, the formation of acid vapors and the effect on the skin of numerous chemical bodies, among which turpentine, alkaline chromates and chromic acids were the most numerous. The disorders noted were found especially in the eyes as a result of radiation and acid vapors and on the skin in the form of dermatitides, eczema, ulcerations and so on. The taking of necessary precautions and the education of the workers seem to be the only effective remedies.

Marriages

IRVING E. SHAFER, Salisbury, N. C., to Miss Maggie Jane Honeycutt of Franklinton, in New York, January 16

RICHARD T. STEPHENSON, New Orleans, to Miss Harriet Shirley Knowles of Jackson, Miss., February 4.

ARTHUR DINTENFASS, Philadelphia, to Miss Theresa Kurtz Kline of Atlantic City, N. J., Sept. 12, 1939.

ARTHUR PAUL MCDONALD to Miss Eleanor Marie Schneider, both of Dayton, Ohio, in January.

MARRES HAROLD WIRIG, Madison, Wis., to Miss Eleanor Narloch of Antigo, January 13.

BERNARD ROBERT SHARFF to Miss Jean Frances Cone, both of Portland, Ore., Dec. 30, 1939.

PAUL P. GOODMAN to Miss Margaret Helen Lewis, both of Milwaukee, January 13.

ORA R. MCMURRY to Mrs. Marie Isbell, both of Eagle River, Wis., January 8.

ABE GOLDEN to Miss Babette Cohn, both of New Orleans, January 31.

GEORGE SHUCKER to Miss Rose Medvene, both of Philadelphia, January 14.

Deaths

Walter Appleton Lane ✠ Milton, Mass.; Harvard Medical School, Boston, 1899; member of the New England Pediatric Society; member of the House of Delegates of the American Medical Association in 1937; at one time assistant in chemistry at his alma mater; past president of the Norfolk District Medical Society; formerly vice president of the Massachusetts Medical Society; served during the World War; at one time school physician; on the staffs of the New England Deaconess Hospital and the Faulkner Hospital, Boston, the Sharon (Mass.) Hospital and the Milton Hospital and Convalescent Home; aged 66; died, January 21.

Albert William Moore ✠ Los Angeles; University of Southern California College of Medicine, Los Angeles, 1904; University of Pennsylvania Department of Medicine, Philadelphia, 1905; fellow of the American College of Surgeons; served during the World War; at one time medical director of the city public schools and member of the board of health; formerly medical director of the Hamilton National Life Insurance Company; on the staff of the Good Samaritan Hospital; aged 63; died, January 20.

Matthew Beardwood ✠ Philadelphia; Medico-Chirurgical College of Philadelphia, 1894; instructor of chemistry from 1896 to 1899, lecturer of clinical chemistry, 1899-1900, adjunct professor from 1900 to 1914 and professor of general chemistry and toxicology at his alma mater from 1914 to 1916; professor of chemistry at the Ursinus College, Collegeville; author of "Students' Notes on Toxicology," published in 1904; aged 68; died, January 28, in the Presbyterian Hospital of coronary thrombosis.

Melville Day Dickinson, Rockville Centre, N. Y.; Albany Medical College, 1890; fellow of the American College of Surgeons; for many years district state health officer with jurisdiction over Nassau and Suffolk counties; served the city of Troy for four years as school medical inspector, eight years as deputy health officer and five years as health officer; at one time president of the medical and surgical board of the Troy Hospital; aged 71; died, January 30, of coronary occlusion.

Charles John McCambridge, Poughkeepsie, N. Y.; Queen's University Faculty of Medicine, Kingston, Ont., Canada, 1898; member of the Medical Society of the State of New York; fellow of the American College of Surgeons; associate surgeon to the Samuel W. Bowne Memorial Hospital and St. Francis Hospital; consulting surgeon to the Hudson River State Hospital; aged 64; died, January 8, of streptococcic pneumonia and cerebral hemorrhage.

James Henry Payne ✠ Acting Assistant Surgeon Lieutenant (j. g.), U. S. Navy, Boston; Harvard Medical School, Boston, 1889; entered the Navy in 1911; served in the Spanish-American War, the Boxer Rebellion in China, the Philippine Insurrection and the World War; retired Sept. 1, 1935, on attaining age of 70 years; aged 76; died, January 31, in the United States Naval Hospital, Chelsea, of bronchopneumonia and arteriosclerotic heart disease.

Louis Rudolph Padberg ✠ St. Louis; Beaumont Hospital Medical College, St. Louis, 1900; St. Louis University School of Medicine, 1910; coroner; senior instructor in pediatrics, St. Louis University School of Medicine; served on the staff of the Alexian Brothers' Hospital in various capacities; aged 61; on the staff of St. Anthony's Hospital, where he died, January 22, of a ruptured left ventricle.

Wilson P. Long, Weatherly, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1886; member of the Medical Society of the State of Pennsylvania; at one time county coroner and member and president of the board of health; for many years physician for the schools of Weatherly; aged 78; died, January 8, in the Hazleton (Pa.) State Hospital.

Charles Francis Linn ✠ Monongahela, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1898; served during the World War; formerly president of the board of health; past president of the Washington County Medical Society; aged 65; on the staff of the Memorial Hospital, where he died, January 16, of pulmonary tuberculosis.

Oscar Williams McEntire, Howard, Pa.; Howard University College of Medicine, Washington, D. C., 1885; Jefferson Medical College of Philadelphia, 1891; member of the Medical Society of the State of Pennsylvania; past president of the Centre County Medical Society; aged 82; died, January 26, of myocarditis and arteriosclerosis.

John Hibbard Pettis ✠ Fresno, Calif.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1906; fellow of the American College of Surgeons; past president of the Fresno County Medical Society; on the staff of the Fresno County General Hospital and the Burnett Sanitarium; aged 62; died, January 28.

Dever James Peck, Susquehanna, Pa.; University of the City of New York Medical Department, 1886; member of the Medical Society of the State of Pennsylvania; past president of the Susquehanna County Medical Society; aged 83; died, January 26, in the Robert Packer Hospital, Sayre, of pneumonia.

Thomas Catlett Gibson ✠ Washington, D. C.; Georgetown University School of Medicine, Washington, 1893; member and past president of the Utah State Medical Association; formerly on the staff of St. Mark's Hospital, Salt Lake City; aged 74; died, January 29, of cerebral hemorrhage and hypertension.

James Pearce Hillard, Springfield, Mass.; Jefferson Medical College of Philadelphia, 1903; member of the Massachusetts Medical Society; for many years medical inspector in the public schools of Springfield; formerly served as physician for the police and fire departments; aged 62; died, January 29.

James Carpinter Cobey ✠ Frostburg, Md.; College of Physicians and Surgeons, Baltimore, 1896; served during the World War; past president of the Allegany-Garrett Counties Medical Society; on the staff of the Miners Hospital; aged 65; died, January 29, in Los Angeles of coronary thrombosis.

William George Falconer ✠ Clearfield, Pa.; Jefferson Medical College of Philadelphia, 1919; fellow of the American College of Physicians; past president of the Clearfield County Medical Society; aged 51; on the staff of the Clearfield Hospital, where he died, January 3, of coronary occlusion.

John Gunkle Thomas, Broomall, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1869; member of the Medical Society of the State of Pennsylvania; Civil War veteran; for many years member of the Newtown Square township school board; aged 95; died, Dec. 13, 1939.

Joshua Lawson Herrington, Mullin, Texas; University of Tennessee Medical Department, Nashville, 1891; member of the State Medical Association of Texas; for many years member of the board of education; health officer; aged 78; died, Dec. 12, 1939, of carcinoma of the pancreas.

David Damon Pratt ✠ New Bedford, Mass.; Harvard Medical School, Boston, 1906; fellow of the American College of Surgeons; on the staff of St. Luke's Hospital; aged 59; died, January 29, of coronary occlusion.

Joseph Erle Jack ✠ Salt Lake City; Columbia University College of Physicians and Surgeons, New York, 1920; fellow of the American College of Surgeons; surgeon to the Dr. W. H. Groves Latter Day Saints Hospital; aged 46; died, January 30, of coronary occlusion.

John Huey Humes, McKees Rocks, Pa.; Hahnemann Medical College and Hospital of Philadelphia, 1902; served during the World War; on the staff of the Ohio Valley General Hospital; aged 60; died, January 28, in the Shadyside Hospital, Pittsburgh.

Charles Ashton Love Sr., San Bernardino, Calif.; American Medical College, St. Louis, 1890; aged 79; died, January 28, in a local hospital, of injuries received when the automobile in which he was driving was struck by a street car.

Douglas Martin Fuchs, East Pepperell, Mass.; Friedrich-Wilhelms-Universität Medizinische Fakultät, Berlin, Prussia, Germany, 1922; member of the New England Society of Psychiatry; aged 42; was found dead, January 10.

Robert Francis Kile, San Francisco; University of Pennsylvania School of Medicine, Philadelphia, 1919; member of the California Medical Association; aged 51; died, January 31, of coronary occlusion and cerebral thrombosis.

Arthur D. Lafrance, New Bedford, Mass.; School of Medicine and Surgery of Montreal, Faculty of Medicine of the University of Laval at Montreal, Que., Canada, 1913; aged 54; died, January 5, of acute dilatation of the heart.

Benjamin E. Jones, Rock Island, Ill.; Louisville (Ky.) Medical College, 1884; for many years medical director of the Modern Woodmen of America; aged 79; died, January 17, in Davenport, Iowa, of gastrointestinal hemorrhage.

Barton Jerome Powell Sr., ✠ Stockton, Calif.; Jefferson Medical College of Philadelphia, 1894; fellow of the American College of Surgeons; aged 66; on the staff of St. Joseph's Hospital, where he died, January 16, of pneumonia.

Thomas Spees Carrington, Los Angeles; Gross Medical College, Denver, 1891; at one time a missionary; served during the World War; aged 71; died, January 21, in the Veterans Administration Facility, West Los Angeles.

Wellington Manley Ross ✠ Buffalo; University of Buffalo School of Medicine, 1911; on the staffs of the La Fayette General Hospital and St. Mary's Hospital; aged 62; died, January 11, of cardiovascular disease.

Dennis P. Harris, Beaumont, Texas (licensed in Texas, under the Act of 1907); member of the State Medical Association of Texas; aged 61; died, Dec. 18, 1939, in St. Therese Hospital of cardiorenal disease.

George Henry Richardson, San Francisco; University of Pennsylvania Department of Medicine, Philadelphia, 1891; aged 73; died, Dec. 1, 1939, in the Veterans Administration Facility of cerebral hemorrhage.

Anselme Ephrem Houle, Cohoes, N. Y.; Albany Medical College, 1893; served during the World War; aged 67; died, January 21, in the Troy (N. Y.) Hospital of chronic myocarditis and arteriosclerosis.

Albert Erving Kilgore, Brooks, Maine; University of Vermont College of Medicine, Burlington, 1886; member of the Maine Medical Association; aged 76; died, January 7, of coronary thrombosis.

David I. Giarth, Kittanning, Pa.; Jefferson Medical College of Philadelphia, 1889; member of the Medical Society of the State of Pennsylvania; aged 80; died, January 20, in Ford City of myocarditis.

William W. Minick, Wichita, Kan.; Homeopathic Medical College of Missouri, St. Louis, 1891; formerly mayor; veteran of the Spanish-American War; died, January 21, in Santa Monica, Calif.

Wayland Mitchell, Lewiston, N. C.; University of Maryland School of Medicine, Baltimore, 1895; formerly member of the state legislature; aged 68; was found dead, January 1, of myocarditis.

Harry Royal Nye ✠ Leominster, Mass.; University of Vermont College of Medicine, Burlington, 1900; on the staff of the Leominster Hospital; aged 67; died, January 8, of accidental gas poisoning.

George O'Bryant De Bar, Eugene, Ore.; Missouri Medical College, St. Louis, 1874; member of the Oregon State Medical Society; aged 90; died, January 27, of myocarditis and arteriosclerosis.

James Andrew Sylvester Pinson, Philadelphia; Meharry Medical College, Nashville, Tenn., 1916; Temple University School of Medicine, Philadelphia, 1917; aged 49; died in January.

George A. Kohler, Minneapolis; Minneapolis College of Physicians and Surgeons, 1900; aged 76; died, January 9, of arteriosclerosis, hypertension, hemiplegia and coronary thrombosis.

John David Verner, Walhalla, S. C.; Emory University School of Medicine, Atlanta, 1915; served during the World War; aged 48; died, January 22, of acute dilatation of the heart.

William Everett Reynolds, Hopkinsville, Ky.; Vanderbilt University School of Medicine, Nashville, 1877; Confederate veteran; aged 95; died, January 26, of cerebral hemorrhage.

George M. Straight, Winchester, Ill.; College of Physicians and Surgeons, Keokuk, Iowa, 1881; for many years county physician; aged 82; died, January 28, of coronary thrombosis.

William Harold Davis, Arlington, Texas; College of Physicians and Surgeons, Baltimore, 1881; aged 81; died, January 24, of cerebral hemorrhage and chronic myocarditis.

William Charles White, Live Oak, Fla.; University of the South Medical Department, Sewanee, Tenn., 1903; postmaster; aged 62; died, January 15, of a self-inflicted gunshot wound.

Frederick Clayton Brigham, Springfield, Mass.; Baltimore Medical College, 1898; aged 68; died, January 22, in the Westfield (Mass.) State Sanatorium of pulmonary tuberculosis.

John Lewis Hanes, Pine Hall, N. C.; University of Maryland School of Medicine, Baltimore, 1902; aged 60; died, January 15, in a hospital at Winston-Salem of lobar pneumonia.

George Palmer Thomas, Rochester, N. Y.; University of Pennsylvania Department of Medicine, Philadelphia, 1901; aged 64; died, January 30, of carcinoma of the rectum.

Franklin S. Davis ✠ Peoria, Ill.; Chicago Homeopathic Medical College, 1893; aged 70; on the staff of the Methodist Hospital, where he died, January 27, of pneumonia.

Sophus Nicolai Jorgensen ✠ San Francisco; Hahnemann Hospital College of San Francisco, 1897; aged 71; died, Dec. 26, 1939, of hemorrhage and duodenal ulcer.

Samuel Lewis Holley, Kittanning, Pa.; Miami Medical College, Cincinnati, 1878; aged 91; died, January 29, in the Armstrong County Hospital of pneumonia.

David Lipscomb Watson ✠ New Orleans; Medical College of Alabama, Mobile, 1891; aged 71; died, Dec. 18, 1939, of arteriosclerosis and coronary occlusion.

Charles Henry Grube, New York; University of the City of New York Medical Department, 1879; aged 81; died, January 21, of cirrhosis of the liver.

Mary Hoffman Jones, Council Bluffs, Iowa; Hahnemann Medical College and Hospital, Chicago, 1896; aged 79; died, January 9, of coronary thrombosis.

John J. Seale, Dallas, Texas; Baylor University College of Medicine, Dallas, 1908; aged 64; died, January 30, of lobar pneumonia and cerebral hemorrhage.

Morris Aaron Weinger ✠ Lynn, Mass.; Boston University School of Medicine, 1927; aged 40; died, January 27, at Miami Beach, Fla., of coronary thrombosis.

Joseph F. McKaig, Washington, D. C.; Georgetown University School of Medicine, Washington, 1893; aged 70; died, January 21, of coronary occlusion.

William Littleton Robins, Washington, D. C.; University of Maryland School of Medicine, Baltimore, 1890; aged 70; died, January 28, of coronary occlusion.

William Henry Killeavy Crehan, Stratford, Ont., Canada; University of Toronto Faculty of Medicine, 1921; aged 49; died, January 11, of heart disease.

Conrado Garza Cantu, Laredo, Texas; Escuela de Medicina de Nuevo Leon, Monterrey, Mexico, 1884; aged 84; died, Dec. 5, 1939, of edema of the lungs.

Willis Benton Stewart, Indianapolis; Hahnemann Medical College and Hospital, Chicago, 1888; aged 84; died, January 7, of chronic myocarditis.

Arthur Richard Carter, New Orleans; Memphis (Tenn.) Hospital Medical College, 1905; aged 61; died, Dec. 23, 1939, of chronic myocarditis.

Erminnie Hill Smallwood, McArthur, Ohio; Woman's Medical College of Cincinnati, 1894; aged 75; died in January of heart disease.

Joseph M. Byler, Warsaw, Ind.; Hahnemann Medical College and Hospital, Chicago, 1876; aged 92; died, January 24, of arteriosclerosis.

William Francis Babb, London, Ont., Canada; Western University Faculty of Medicine, London, 1903; aged 68; died, Dec. 1, 1939.

Alex E. Brosier, Amistad, N. M.; Medical College of Ohio, Cincinnati, 1896; aged 79; died, January 22, of bronchopneumonia.

De Lacy Faust, Liberty, N. C.; Davidson School of Medicine, Davidson, 1905; aged 57; died, January 1, of coronary thrombosis.

Moses De Ford ✠ Philadelphia; Jefferson Medical College of Philadelphia, 1886; aged 76; died, January 28, of coronary thrombosis.

Edmond Raoul Berges, Geyserville, Calif.; College of Physicians and Surgeons of San Francisco, 1897; aged 63; died in January.

Julius Emmanuel Foehrenbach, Philadelphia; Jefferson Medical College of Philadelphia, 1894; aged 66; died, Dec. 13, 1939.

Morgan P. Bates, Ramburst, Ga.; Chattanooga (Tenn.) Medical College, 1894; aged 77; died, January 30, of pneumonia.

Jasper Beattie, Lincoln, Neb.; Barnes Medical College, St. Louis, 1894; aged 72; died, January 30, of aortic insufficiency.

John Granville Osborne, Houston, Texas; Leonard Medical School, Raleigh, N. C., 1910; aged 67; died, January 23.

Francis Arthur Murray, Lake City, Fla.; Leonard Medical School, Raleigh, N. C., 1908; aged 57; died, January 11.

John Daniel Cooper, Brookeland, Texas; Gate City Medical College, Dallas, 1907; aged 78; died, Dec. 10, 1939.

Brooks B. Glover, Kedron, Ark. (licensed in Arkansas in 1903); aged 83; died, January 3, of chronic nephritis.

Nathan Winter ✠ New York; Long Island College Hospital, Brooklyn, 1918; aged 52; died, Dec. 30, 1939.

Albert Edward Adkins, Norborne, Mo.; Missouri Medical College, St. Louis, 1887; aged 80; died in January.

Bureau of Investigation

ANOTHER BALD FRAUD

"Linday's New Hair Compound" Declared a Fake

Of the making of many "hair growers" there is no end! One, "Linday's New Hair Compound," has run afoul of the Post Office Department at Washington and been debarred from the mails. The fraud order was made to cover the firm names "Linday" and "Linday Laboratory," New York.

On Nov. 22, 1935, the Federal Trade Commission announced that it had ordered this company to cease and desist from making false and misleading representations for its product as a "hair restorer."

In the Post Office case the principal in the enterprise, Murray L. Linday, was called on to show cause why a fraud order should not be issued against his business. Linday replied with a letter denying the charges and also submitted nine testimonial letters he claimed to have received. Neither he nor any one representing him, however, put in an appearance on the date set for the hearing.

The memorandum on the case, prepared by Post Office Solicitor Vincent M. Miles, brought out that Linday was engaged in advertising and selling through the mails Linday's New Hair Compound as a treatment for growing hair on persons already bald as well as those inclined toward baldness. The business was started in 1927 and operated up to 1935, when it was suspended, resuming operation in the spring of 1938.

Those who answered the advertisements, one of which offered a free booklet containing the advice of "an outstanding authority" on "a harmless way to remove dandruff or itch, stop and prevent excessive hair loss," received a four page form letter reading in part:

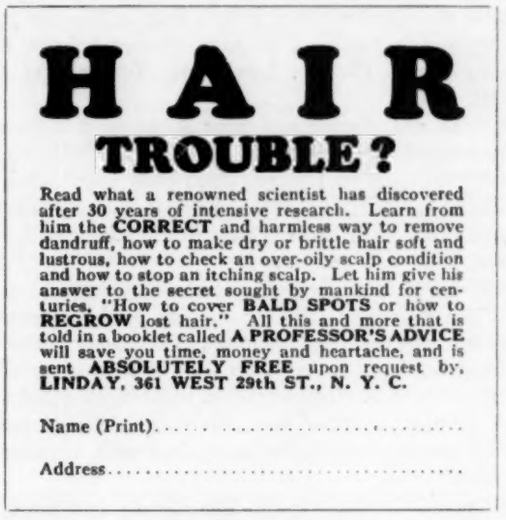
> The information and advice provided in this brief outline, is supplied by a mind that has devoted a lifetime to the study of the various causes of hair and scalp ailment, and to years of research for such means as might provide the most effective form of correction and adjustment. . . .
>
> It is necessary for man to resort to artificial means, yet to make that means as near to being natural as possible to replenish and regenerate if possible the lack of potency both in quality and quantity of the fatty substance in the scalp, if he is to make his hair strong against disease or baldness, or if he hopes to grow it back. And it is with this definite thought in mind that all research was directed. The result of which is the formation of a compound containing 8 different highly potent oils and natural animal fat, that are intended to supply wherever and whenever possible through external means, the function of increasing both in quality and quantity, the natural fatty content of the scalp. These fats and oils supply a natural constructive action, and offer the means for greater resistance against external disintegration and infection. . . .
>
> Prior to April 1937, we provided almost 40 different formulae to suit the individual requirement. But as our records over a period of years showed that all cases regardless of sex or age responded most favorably to formula 8B, we made the practice of supplying this formula to all cases regardless of detail, and we find that this has been most effective and successful. . . .
>
> The 8B formula will stop excessive hair loss almost at once, because it removes the harmful factors in the scalp that tend to weaken the hair, and because it supplies such matter as tends to strengthen through natural means. It will help restore the natural color and brilliance of the hair because of the constructive potent value of the natural oils and fats in the compound. It will make hair soft in texture, and in every respect provide the maximum satisfaction available from external means. In cases of Alopecia Areata (bald patches), it has never failed to regrow the hair within 60 days. . . .

The memorandum went on to show that persons who swallowed the bait and sent in their money received a jar of semiliquid substance. Government chemists who analyzed this reported that it was essentially a mixture of lard, castor oil, cottonseed oil, cod liver oil, witch hazel, bay rum, saltpeter, beta-naphtha, kerosene and bergamot oil.

Medical evidence presented for the government's case showed that the preparation, because of the fixed oils or greases it contained, would tend temporarily to soften the hair and also the external layers of the scalp, have some slight stimulating or irritant effect on it, temporarily check excessive dandruff and to some slight extent inhibit the growth of certain germs. The evidence showed, however, that there is no known drug or combination of drugs which will correct all causes of loss of hair; that the product in question when applied as directed would not reach the so-called hair root or papilla; and that the promoter's representation that the mixture would "bring in a real regrowth of hair" on bald-headed persons was false and fraudulent.

It was also brought out in this case that Mr. Linday is a concert violinist but was without work in that profession for some time, and that he is not a physician, pharmacist or chemist, nor does he employ any such persons in the conduct of his business. A bit of humor is introduced in the memorandum: "When Mr. Linday was interviewed by a Post Office inspector some months ago, it was noted that the top of his head was sparsely covered by hair"!

As the defendant did not offer acceptable evidence to show why a fraud order should not be brought against him, such an order was issued on June 16, 1939. Thus Linday's "cure" goes


HAIR
TROUBLE?
Read what a renowned scientist has discovered after 30 years of intensive research. Learn from him the CORRECT and harmless way to remove dandruff, how to make dry or brittle hair soft and lustrous, how to check an over-oily scalp condition and how to stop an itching scalp. Let him give his answer to the secret sought by mankind for centuries, "How to cover BALD SPOTS or how to REGROW lost hair." All this and more that is told in a booklet called A PROFESSOR'S ADVICE will save you time, money and heartache, and is sent ABSOLUTELY FREE upon request by, LINDAY, 361 WEST 29th ST., N. Y. C.
Name (Print).....
Address.....

A typical Linday advertisement.

into partial if not total eclipse. His actual or prospective customers need not despair; there'll be another one along any time now, just as good—and just as worthless!

MISBRANDED "PATENT MEDICINES"

Abstracts of Notices of Judgment Issued by the Food and Drug Administration of the United States Department of Agriculture

[EDITORIAL NOTE.—The abstracts that follow are given in the briefest possible form: (1) the name of the product; (2) the name of the manufacturer, shipper or consigner; (3) the composition; (4) the type of nostrum; (5) the reason for the charge of misbranding, and (6) the date of issuance of the Notice of Judgment—which is considerably later than the date of the seizure of the product and somewhat later than the conclusion of the case by the Food and Drug Administration.]

Bowman's Cramp and Diarrhea Mixture.—Bowman Bros. Drug Co., Canton, Ohio. Composition: Chiefly alcohol, water, chloroform, menthol and a morphine-bearing drug. Fraudulently represented as a remedy for cramps, diarrhea, bloody flux and so on.—[*N. J. 30241; June 1939.*]

Bromo Sed and Somno Sed.—Roche, Renaud Pharmaceutical Co., Inc., Fairhaven, Mass. Composition: Less than the 80 grains of strontium bromide and 2 grains of phenobarbital per ounce that the product was falsely labeled to contain.—[*N. J. 30244; June 1939.*]

Edwenil.—Spicer & Co., Glendale, Calif. Composition: Essentially magnesium and nitrogenous compounds in a solution of common salt, with small amounts of carbolic acid and silica. Fraudulently represented as effective for respiratory disorders, especially pneumonia, and for carbuncles, skin infections and some other disorders.—[*N. J. 30231, 30232; June 1939.*]

Elmi Electro Mineralized Water.—Electro Mineral Co., Detroit. Composition: An artificially prepared mineral water containing approximately 0.7 per cent of Glauber's salt, a small quantity of alkali and negligible amounts of other mineral substances. Did not possess peculiar electrical properties. Fraudulently represented as a remedy for rheumatism, indigestion, boils, decaying teeth, skin eruptions, diabetes and some other disorders.—[*N. J. 30236; June 1939.*]

Hytest Cold Capsules.—International Drug Sales Co., Denver. Composition: Not reported, except that no acetanilid was present, though label claimed 1½ grains of it per capsule. Declared adulterated.—[*N. J. 30240; June 1939.*]

Sexol Tablets.—Erie Laboratories, Cleveland. Composition: Essentially iron phosphate, talc, plant extractives and an alkaloid. Fraudulently represented as an invigorating tonic and as a stimulant.—[*N. J. 30229; June 1939.*]

Correspondence

MUCOR INFECTION

To the Editor:—Referring to the Wade-Matthews article "Cutaneous Mucor Infection of the Face" (The Journal, February 3, p. 410), Kovnat and I reported in The Journal Dec. 10, 1932, under the title "Streptotrichosis" one case which, besides presenting all the important characteristics of the acute pulmonary form of the disease, "is the only case, so far as a search of the literature can reveal, that is directly traceable to a chronic skin nodule of the same etiology existing dormant for many years" (Brown, Lawrason: Yearbook of General Medicine, 1933).

The acute and chronic cutaneous forms of this disease are well known and amply described by Edith J. Claypole (Human Streptotrichosis and Its Differentiation from Tuberculosis, *Arch. Int. Med.* **14**:104 [July] 1914), Flexner (Pseudotuberculosis, *J. Exper. Med.*, 1899) Stein (Fadenpilzerkrankungen, Lehmanns Atlanten, 1931) and others.

The disease in itself is rather a common one but seldom recognized. The diagnostic difficulty consists in the extreme pleomorphism of the causative organism. Conditions caused by the same fungi bearing this very high scale of botanic variation are called sporotrichosis, streptotrichosis, nocardiosis, pseudo-actinomycosis, "mucor infection," and other names. We recommended that the name streptotrichosis be retained until classification is standardized.

The diagnosis is always easy. The Mezei granules are invariably present in each such skin condition and are pathognomonic for this disease. These granules can be easily detected. A plain smear of the suspected material will show by transmitted light spherical, brownish granules in diameters from 0.01 to 2 mm. This is typical. These granules disappear in stained specimens.

As to the treatment, a deep cauterization of the affected skin is advisable, followed by autovaccine.

Cornelius M. Mezey, M.D., New York.

CHEMICAL TESTS FOR ALCOHOLIC INTOXICATION

To the Editor:—It is implied in the editorial comment (The Journal, February 3, page 415) on the 1939 report of the Committee on Tests for Intoxication of the National Safety Council, Chicago, that there is no question regarding the validity of chemical tests for alcoholic intoxication. While it is desirable to have clarity with respect to legal definitions of such phrases as "under the influence" and "intoxicated," it is also necessary to have confidence in the reliability of chemical tests involving concentrations as small as 0.05 per cent by weight of alcohol in the blood, urine, saliva or breath, if such tests are to be sanctioned legally.

Biochemists and toxicologists who have had extensive experience with these tests are not convinced that they are as reliable as might be implied by the recommendation of the American Medical Association Committee to Study Problems of Motor Vehicle Accidents. Based on the Nicloux method of estimating organic reductants by dichromate color changes, tests for alcohol are relatively nonspecific. While titration may increase the accuracy, it has no bearing on specificity. The toxicologist to the coroner of San Francisco became skeptical of positive tests for alcohol in blood at a necropsy when it was extremely unlikely that the individual had taken alcohol prior to death. This skepticism led to many laboratory experiments on animals. These experiments are still in progress but have definitely served to cast doubt on the reliability of the Heise-Halpern test, which is commonly employed. Triplicate analyses, including distillation, of the same blood sample usually agree closely. But such examinations of blood obtained from normal healthy rabbits that have never ingested alcohol, as far as is known, reveal an appreciable number of animals in which there is an apparent alcohol concentration sometimes as high as 0.15 per cent. The incidence of positive tests for alcohol in the blood by this standard colorimetric method seems to be higher in rabbits exposed to asphyxiation.

The most likely explanation of these observations is that there are interfering compounds which may be distilled from body fluids and which may yield positive color reactions with dichromate-sulfuric acid mixtures. Our evidence suggests lactic and pyruvic acids, even though their boiling points are much higher than the boiling point of alcohol. Methylglyoxal is another possible interfering substance. Direct tests on blood from persons having no contact with alcohol indicate that lactic acid, in amounts found in asphyxiation, rigor mortis or severe exercise, will give results by the Heise method which would be at present interpreted as alcohol concentrations ranging from 0.05 to 0.2 per cent.

Until the specificity and reliability of chemical tests for alcohol in the blood have been established, it is our opinion that it is unwise to recommend legislation involving specific methods or figures.

Joseph B. Swim.
Elton L. McCawley.
Chauncey D. Leake, Ph.D.
University of California Medical School, San Francisco.

REACTIONS OF EPINEPHRINE IN OIL

To the Editor:—In the February 24 issue of The Journal Dorwart calls attention to a severe reaction following an injection of epinephrine in oil. Because of the widespread use of this slowly absorbed epinephrine preparation and because serious reactions have occurred in the past following its administration, I feel that it is my duty, as progenitor of epinephrine in oil, to suggest an adequate explanation for these reactions and thus prevent their occurrence in the future.

Reactions to epinephrine in oil may be divided into two groups: In the first group are included local reactions. These may be divided into two different types. One type is manifested by soreness and perhaps redness and swelling. This reaction occurs at the site of injection, persists for from twenty-four to forty-eight hours and is due to the irritating free fatty acids present in the vegetable oil. During the time when I was preparing epinephrine in oil these reactions were not uncommon, but with the advent of commercial preparations they are infrequently observed. This is, perhaps, due to the fine grade of refined oil used by the commercial drug houses. The second type of local reaction is the allergic reaction, which may appear after several consecutive injections have been given. Although one might anticipate a goodly number of such reactions, I have experienced only two that might be so classified.

In the second group are included reactions that are directly referable to the epinephrine. There are also two types of reactions in this group. One type, though unpleasant, is not serious and is manifested by nervousness and tachycardia, which appears in from fifteen to thirty minutes after the injection and persists for from thirty to sixty minutes thereafter. This reaction is caused by an overdosage of epinephrine in oil. Because tolerance for epinephrine in any form varies greatly in different individuals, I have often stressed the importance of choosing cautiously the initial dose. The second type, or serious reaction, presents an alarming clinical picture and is usually manifested by prostration, severe nervousness, tachycardia, excruciating headache, extrasystoles, rise and then perhaps fall in the blood pressure, and vomiting.

In previous publications I have reported two such reactions, and subsequently I have learned of two similar ones. The case reported by Dorwart represents another.

In an attempt to explain the serious reactions which occurred in the four cases referred to, I reviewed in detail with the physicians who had made the injections the dosages employed and the technics of administration. One clue was elicited: each physician had employed an intravenous needle (18 or 20 gage) to administer the epinephrine in oil. Large gage needles are conducive to rapid administration, and it is logical to believe that the rapid introduction of an oily injectant might rupture small blood vessels and thereby permit its rapid absorption. For administering epinephrine in oil I employ a 23 or 25 gage needle, and in three years I have given nearly 5,000 injections to more than 350 different patients and have never experienced a reaction that might be classified as "severe."

Dorwart suggests the possibility that the epinephrine particles may separate out of the oil and thence be absorbed in large quantities. This is unlikely. The sedimentation of epinephrine particles in the oil is a matter of hours, not minutes. Furthermore, I cannot see how contact with water in a syringe or contact with tissue juice could speed up absorption. Epinephrine in oil is slowly absorbed because the oil is slowly diffused through the tissues and because the oil restricts contact of the tissues with the epinephrine particles. The oil likewise restricts contact of water in a syringe with epinephrine particles.

Dorwart did not mention in his article the gage of needle which he employed in making the injection of epinephrine in oil. In view of my past experiences as related, I feel that such information is important.

To prevent reactions to epinephrine following the administration of epinephrine in oil, I should like to stress that (1) the initial dose be chosen cautiously, (2) a 23 or 25 gage needle be employed in making the injection and (3) the injections be administered slowly.

EDMUND L. KEENEY, M.D., Baltimore.

"DELAYED CUTANEOUS REACTION TO INTRADERMAL INJECTION OF BRUCELLERGEN"

To the Editor:—In the February 10 issue of THE JOURNAL, under Clinical Notes, Suggestions and New Instruments, is an article by January and Greene entitled "Delayed Cutaneous Reaction to Intradermal Injection of Brucellergen in Brucellosis" in which the authors discuss the relative infrequency of this occurrence and quote other observers.

I mentioned delayed cutaneous reaction to intradermal injection of heat-killed Brucella abortus vaccine in an article published in the *New York State Journal of Medicine*, Dec. 1, 1934, entitled "Undulant Fever—Difficulties in Diagnosis and Treatment—A Preliminary Report of Fifty-One Cases." This article was abstracted in THE JOURNAL, Feb. 16, 1935. In the summary of the case history of A. H. on page 3 of that article it was stated: "A skin test showed a delayed positive reaction at the end of seven days." Although I cannot find that I have discussed this subject since that date except in a monograph on brucellosis not yet published, I have come to look on this unexplained phenomenon as not rare. I have noted it in five or six instances among approximately 300 cases of brucellosis diagnosed since 1932. Its importance seems so great, especially in the presence of a negative blood agglutination test and a negative blood culture, that I have made it a rule to read all cutaneous tests done with heat-killed vaccine on the fourth day and, if negative, to reread them on the seventh day. It is especially important to note cutaneous reactions accurately, since the interpretation of the opsonocytophagic index depends on the presence or absence of a positive intradermal test.

HAROLD J. HARRIS, M.D., Westport, N. Y.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

TREATMENT OF RAYNAUD'S DISEASE

***To the Editor:*—Please inform me what is considered to be the proper treatment of Raynaud's disease at the present time.**

E. H. Wagenaar, M.D., Portage, Mich.

ANSWER.—Patients with a mild degree of true Raynaud's disease (excluding the secondary forms due to cervical rib, spondylitis or other factors), with infrequent slight attacks limited to the winter months and without trophic changes, digital infection or focal gangrene, can be made considerably more comfortable by medical measures. For advancing Raynaud's disease a suitable sympathectomy is the treatment of choice, provided operation is done before sclerodactyly or organic changes have conspicuously reduced the capacity for dilatation. All patients with Raynaud's disease should have periodic examinations at frequent intervals, particularly in cold weather, so that significant changes in peripheral circulation may be detected before organic occlusion and trophic changes diminish the usefulness of surgical treatment.

In nervous persons the symptoms of mild Raynaud's disease may be benefited by relaxation of mental stress, psychotherapy and simple reassurance. If the basal metabolic rate is low the administration of thyroid substance or thyroxine should be tried; the dosage should be great enough to elevate the basal metabolic rate to normal. Patients who are underweight often improve under a regimen of daily rest periods and a high caloric diet. The use of tobacco should be prohibited. Moving to a warmer climate may be helpful in mild cases but is less useful in severe cases. When exposure to cold cannot be avoided, the extremities should be carefully protected and heavy clothing should be used to conserve body heat. The digits should also be protected against trauma and infection, particularly during the winter months. Acetyl-beta-methylcholine chloride (mecholyl) in doses between 0.1 and 1 Gm. by mouth prevents mild attacks or modifies severe attacks if taken shortly before exposure to cold.

For increasingly severe and progressive Raynaud's disease sympathectomy is indicated, provided appropriate skin temperature studies indicate that the capacity for vasodilatation is still good. For Raynaud's disease of the lower extremities, lumbar sympathetic ganglionectomy offers practically complete relief of symptoms. In treating the upper extremities cervicodorsal ganglionectomy, while sometimes helpful, is often followed by sensitization of the denervated vessels with resulting secondary vasospasm. The more recently devised operation of cervicodorsal preganglionic sympathectomy avoids the secondary vasospasm, and the results in the upper extremity have been correspondingly better in recent years, provided preoperative vasodilatation tests demonstrate good capacity for vasodilatation.

BACTERIA OF MILK

***To the Editor:*—What is the difference between Bacterium lactic aerogenes and Lactobacillus? What is the difference between Lactobacillus and Lactobacillus acidophilus or bulgaricus? Is Streptococcus lacticus different from Bacillus bulgaricus or acidophilus? In what way? In what American milk products do you find the predominance of Streptococcus lacticus with a small number of Bacterium lactis aerogenes?**

M.D., New York.

ANSWER.—Many different micro-organisms may contribute to the natural souring process in milk. Those most commonly involved fall generally into three groups, the Bacterium (lactis) aerogenes types, Streptococcus lacticus and the lactobacilli. Bacterium aerogenes is a gram-negative encapsulated gas producing bacillus closely related to Bacterium coli. It is commonly present in naturally souring milk and is believed to be particularly active in the early stages of the process. When it predominates it produces a gaseous fermentation which renders the product less palatable. It is usually overgrown, however, by the more vigorous acid producing streptococci and lactobacilli, which presumably are the chief factors in the later stages of natural souring. Both of these are gram positive. The streptococci form fairly long chains of rounded cells. The lactobacilli are rod shaped organisms usually in pairs or palisade arrangement. A number of species of lactobacilli are found in milk products. The commoner forms are Lactobacillus bul-

garicus and Lactobacillus acidophilus, which differ from each other in minor respects. However, since Lactobacillus acidophilus easily becomes established in the human intestine, it is claimed (Rettger, L. F., and Cheplin, H. A.: A Treatise on the Transformation of the Intestinal Flora with Special Reference to the Implantation of Bacillus Acidophilus, New Haven, Yale University Press, 1921) that the intestinal flora can be changed from a putrefactive to a fermentative type more readily by feeding milk products containing it. Bacterium aerogenes is rarely absent from commercial milk products, but the modern practice of inoculation with controlled "starters" or pure cultures keeps this organism to a low percentage of the total bacterial flora. Streptococcus lacticus is presumably the predominant micro-organism in buttermilk that is not labeled "Bulgarian" or "Acidophilus."

DISINFECTION AND STERILIZING AGENTS

To the Editor:—**1. Is alcohol a reliable sterilizing agent and, if so, at what percentages and after how long an application? 2. Is saponated solution of cresol a reliable sterilizing agent and, if so, at what percentages and after how long an application? 3. How often should carriage lifting forceps or other lifting forceps (and container) which are used frequently be sterilized in order to maintain safe sterile technic? 4. How long will material kept dry in the container remain sterile if exposed to the air once a day or if kept tightly closed constantly?** M.D., Iowa.

ANSWER.—The efficiency of chemical disinfecting or sterilizing agents is so dependent on the form and material of objects to be sterilized that it is difficult to give general answers to the first two questions.

1. Probably the most effective concentration of alcohol is 70 per cent by weight (from 80 to 82 per cent by volume). It is questionable whether immersion of objects in alcohol for several hours will sterilize, although exposure for a much shorter time may disinfect objects sufficiently for some purposes.

2. Saponated solution of cresol is also to be regarded as a disinfecting agent rather than a sterilizing agent and may be used in concentrations of 1 or 2 per cent.

3. Carriage lifting forceps should be sterilized as effectively and as often as are the objects (instruments) to be handled by them. It is common hospital practice to sterilize lifting forceps by heat once or twice a day and to keep them standing in a disinfectant such as 1 per cent saponated solution of cresol between sterilizations. The sufficiency of this technic is questionable.

4. Material sterilized and kept dry in a well covered container will remain sterile indefinitely. When the lid of the container is removed the chance of contamination is dependent entirely on the technic of handling and the amount of dust in the air. If carefully done in a room relatively free from dust, such a container may be opened many times with little danger of contamination by pathogenic organisms.

MYELOGENOUS LEUKEMIA

To the Editor:—**Please inform me of any recent developments in the treatment of aleukemic myelogenous leukemia and the present accepted methods of treatment, if any.** F. J. Vollmer, M.D., Howard, S. D.

ANSWER.—The treatment of aleukemic myelogenous leukemia is the same as that of myelogenous leukemia. There are no new forms of treatment. The most satisfactory treatment depends first on determining whether the leukemia is of the acute or the chronic type.

Acute myelogenous leukemia is distinguished by a relatively sudden onset, the presence of several degrees or more of fever and usually by the presence of lesions in the throat and mouth. The spleen is only moderately enlarged at first. The blood picture shows severe anemia and a high percentage of young forms in the myeloid cells. The total white cell count is not important. When it is low and few myeloid cells are present, it is termed aleukemic. The proportion of myeloblasts is usually 50 per cent or more of the total myeloid cells present.

Chronic myelogenous leukemia, on the other hand, is characterized by an insidious onset, the temperature is either normal or only slightly elevated, and the spleen is enlarged. The blood picture shows at first only moderate anemia; and although the myeloid cells are young, the proportion of myeloblasts is relatively low—from 5 to 20 per cent. The prognosis in acute leukemia is bad; death occurs in a period ranging from weeks to months, whereas in chronic leukemia it averages from three to four years.

No treatment known is of any value in acute myelogenous leukemia. Transfusions are merely supportive. In chronic leukemia, however, roentgen treatment over the long bones and spleen is usually effective. The blood picture may be improved, and the size of the spleen decreases. Solution of potassium arsenite, given to tolerance, has a similar but less beneficial action. In aleukemic myelogenous leukemia care must be taken that the roentgen treatment does not lower the white cell count to dangerously low levels.

PARKINSON'S SYNDROME NOT RELATED TO THIAMIN (VITAMIN B_1) DEFICIENCY

To the Editor:—**Can you give me any information about the subarachnoid injection of vitamin B_1 in muscular dystrophies or other central nervous system lesions? I should like to ask particularly if there is any record of this substance being used thus in the parkinsonian syndrome due to encephalitis and, if so, information about the dosage, exact substance and the technic of administration.** P. G. Hamlin, M.D., Cambridge, Md.

ANSWER.—There is no evidence that vitamin B_1 deficiency is the cause of muscular dystrophy. It is clear, however, that the deficiency of vitamin B_1 can result in lesions of the peripheral nerves, the spinal cord, the alimentary tract, the cardiovascular system and the skin. The work of Elvehjem and Spies has shown clearly that the neuritic and spinal cord lesions are associated with vitamin B_1 deficiency, that nicotinic acid deficiency is associated with pellagra-like lesions of the skin, alimentary tract and central nervous system, and that riboflavin deficiency is associated with cutaneous lesions about the nose and angles of the mouth. Thiamine hydrochloride has been tried on patients with parkinsonism, but with no beneficial effect. Moreover, there is not an iota of evidence that parkinsonism is in any way related to vitamin deficiency nor is there any good reason to use thiamine hydrochloride by subarachnoid injection. It has been demonstrated that nicotinic acid will bring about a remission of pellagra, that thiamine hydrochloride will cure beriberi and that riboflavin will heal the lesions caused by riboflavin deficiency. Thiamine hydrochloride, when needed, can be given effectively by the oral, intramuscular and intravenous routes.

References:

The Vitamins (textbook of a Symposium on Vitamins), Chicago, American Medical Association, 1939.

Spies, T. D.; Vilter, R. W., and Ashe, W. F.: Pellagra, Beriberi and Riboflavin Deficiency in Human Beings, THE JOURNAL, Sept. 2, 1939, p. 931.

Spies, T. D.; Bean, W. B., and Ashe, W. F.: Recent Advances in the Treatment of Pellagra and Associated Deficiencies, *Ann. Int. Med.* **12**: 830 (May) 1939.

Margulis, S.: Nutritional Dystrophy: Multiple Vitamin Deficiency Disease, *Ztschr. f. Vitaminforsch.* **8**: 220, 1939.

FRIGIDITY IN WOMEN

To the Editor:—**I am interested in knowing the method of treatment for frigidity or lack of sexual pleasure in women. Any information you could give me and any books to which you could refer me concerning this would be sincerely appreciated.** Edward N. Dunn, M.D., Moscow, Idaho.

ANSWER.—The treatment of frigidity in women depends on accurate diagnosis as to the underlying cause. In the vast majority of cases the cause lies with the husband. Impotence, either partial or complete, is one of the main causes of frigidity in the wife. The practice of withdrawal, which is stated to be a frequent method of contraception, is another cause for frigidity; the orgasm in the woman comes on as a rule much later than in the man and therefore when the husband withdraws his penis before his own orgasm it must necessarily be before the orgasm of the wife. When this practice is kept up for months or years, the wife finally becomes disgusted with the entire sexual act. In many cases the husband thinks only of himself and does not attempt to arouse any passion or desire in the wife before coitus. The treatment of this form of frigidity is education.

It must be remembered that sexual desire in the modest woman is often developed only several months after marriage, and frigidity may be considered almost normal during this period.

There is another form of frigidity due to an organic condition in women, namely partial or complete sexual anesthesia in the vaginal mucous membrane. This condition has been described by Huhner (The Diagnosis and Treatment of Sexual Disorders in the Male and Female Including Sterility and Impotence, Philadelphia, F. A. Davis Company). One must have experience however in making this diagnosis, as different portions of the female genital tract have different degrees of sensitivity. The treatment consists in inserting a large vaginal electrode and administering the sinusoidal-galvanic current for about ten minutes. Treatments may be given twice a week.

The absolutely frigid woman does not complain, as sex means nothing to her, so that when a woman complains it indicates that she has some sexual desire. There are of course cases of psychic frigidity in which the woman has been brought up in such a manner as to consider everything pertaining to the sex

act as bestial or degrading. Such cases are really infrequent and, if the woman marries the proper man, it will be cured in time without any treatment. This condition has been dignified by the name of "intellectual frigidity."

In chronic masturbation in women, the centers in the brain connected with the clitoris have been developed to the detriment of the centers connected with the vaginal mucous membrane. The treatment does not consist in having the husband bring on an orgasm during coitus by titillation of the clitoris but by persisting in normal coitus to develop the proper centers.

RHEUMATIC FEVER-LIKE LESIONS IN ANIMALS

To the Editor:—**Has rheumatic fever been observed in animals? Have cardiac lesions, which are the sequels of rheumatic fever in the human being, been found in animals?**

J. E. Schmidt, M.D., Baltimore.

ANSWER.—As far as can be ascertained from the literature, true rheumatic fever has not been observed in animals either in the natural state or artificially induced. In animals with endocarditis which have been inoculated with nonhemolytic streptococci focal myocarditis has been encountered which resembles that seen in subacute bacterial endocarditis of man; but these lesions only remotely resemble the granulomas found in true rheumatic myocarditis. Klinge (Der Rheumatismus, Munich, J. F. Bergmann, 1933) and others have also described focal myocardial lesions in animals which have received multiple injections of foreign protein such as horse serum or pig serum. Again these lesions, while having in their centers areas of "fibrinoid" degeneration, are not identical with Aschoff bodies.

Recently Loewe and Lenke (*J. Exper. Med.* **71**:89 [Jan.] 1940) have described in a number of rabbits myocardial lesions which more closely resemble the endocardial and myocardial inflammation induced by rheumatic fever. They think that these lesions occurred in an epizootic among the animals under observation. Pearce (*Arch. Path.* **28**:827 [Dec.] 1939) has also described recently diffuse endocardial, myocardial and pericardial lesions in rabbits inoculated with virus III and then submitted to various procedures which would tend to increase the work of the heart or to traumatize it. While these lesions would not be confused with those of rheumatic carditis, the element of trauma in causing the virus to localize in the heart is of considerable interest.

WESTERGREN SEDIMENTATION TECHNIC

To the Editor:—**1. In obtaining blood sedimentation rates with the Westergren technic, what is the correct amount of 3.8 per cent sodium citrate solution to use with whole blood? Some technicians use 0.5 cc. of the 3.8 per cent sodium citrate and add 2 cc. of whole fresh blood, and others use the same amount of anticoagulant but add 4.5 cc. of whole blood. 2. Are the rates of descent fully comparable regardless of any part anemia may play? 3. What are the upper limits of normal in both if there is a difference?**

M.D., Wisconsin.

ANSWER.—1. In observing the sedimentation rate by the technic described by Westergren, 3.8 per cent sodium citrate is employed in a ratio of one part of anticoagulant to four parts of venous whole blood. Therefore 1 cc. of this solution is mixed with 4 cc. of whole blood. Authors other than Westergren have modified the volume of citrate solution employed without realizing that a decreased dilution of the whole blood increases the rate of sedimentation as compared to that observed with the 20 per cent dilution used in the original method.

2. Variations in erythrocyte concentration produce less alteration of the sedimentation rate for the Westergren procedure than for technics employing anticoagulants which do not dilute the blood significantly, i. e. heparin, potassium oxalate and the mixture of ammonium and potassium oxalates. Anemia produces a moderate increase in sedimentation rate however with the Westergren method, and Gram has devised a method for correction of this effect (Gram, H. C.: *Acta med. Scandinav.* **70**:242, 1929). The correction for anemia for the Westergren technic is not entirely satisfactory and is seldom employed. A more complete discussion of the entire subject has been reported (Ham, T. H., and Curtis, F. C.: *Medicine* **17**:447 [Dec.] 1938).

3. Using the Westergren method (and employing the volume anticoagulant recommended by Westergren), the upper limit of normal is approximately 8 to 10 mm. of sedimentation in one hour. The usual normal limits are 3 mm. and 7 mm. in one hour for men and for women, respectively. In blood samples with decreased erythrocyte volume the values would be somewhat higher, approaching 15 mm. in one hour with significant anemia. No set figures can be given for the influence of anemia, since the sedimentation rate is influenced by both the volume of erythrocytes in suspension and by the size of the cell, i. e. whether macrocytic or microcytic (see Ham and Curtis).

ERGOTAMINE TARTRATE IN PRURITUS

To the Editor:—**I should appreciate a discussion on the use of ergotamine tartrate in pruritus.**

M.D., Iowa.

ANSWER.—Ergotamine tartrate, or gynergen, has some of the therapeutic properties of ergot. It has been much used in the treatment of migraine. Caution is necessary in its use because of the danger of poisoning from excessive doses or from the long continued administration of therapeutic doses. Therapeutic doses stimulate the sympathetic motor nerve endings; toxic doses paralyze them. Gangrene has resulted from its continued use. Especial caution is necessary when it is used with patients who suffer from arterial disease, because of the increase in blood pressure which it causes.

Chalier and Riou (Serum Pruritus and Ergotamine Tartrate, *Lyon méd.* **161**:541 [May 8] 1938) recommended the oral administration of ergotamine tartrate in serum pruritus. Two cases of persistent urticaria successfully treated with ergotamine tartrate were reported by Thévenot (Two Cases of Persistent Urticaria Successfully Treated with Ergotamine Tartrate, *Lyon méd.* **161**:339 [March 20] 1939). Neither of these reports, however, is extensive or scientifically convincing. The complications following the use of ergotamine tartrate have been fully discussed by von Storch in THE JOURNAL July 23, 1938, page 293. Dosages and some other pertinent data are given in an answer to a query in THE JOURNAL July 2, 1938, page 81.

BLOOD GROUPS OF ESKIMOS

To the Editor:—**I found in the literature somewhere the statement that all pure blooded Eskimos fall in the group I blood type. I should like to know whether or not that statement is correct or approximately so.**

C. W. Henney, M.D., Portage, Wis.

ANSWER.—The statement that all pure blooded Eskimos belong to group O is erroneous. There is no single distribution of the blood groups characteristic for all Eskimos, since this people consists of isolated groups which by inbreeding have each developed characteristic distribution of their own. Three examples are the following:

	Percentage of Groups			
Location	O	A	B	AB
Cape York	80.7	12.9	2.4	4.0
West Greenland	41.1	53.8	3.5	1.4
East Greenland	23.9	56.2	11.2	8.7

For additional examples the book on Blood Groups and Blood Transfusion by Wiener (ed. 2, Springfield, Ill., & Baltimore, Charles C. Thomas, 1939, p. 201) could be consulted. The examples given show the wide disparity in the distribution of the groups in different tribes of Eskimos.

GERMICIDAL PROPERTIES OF MERCURY COMPOUNDS

To the Editor:—**What would be the efficiency of a 1:1,000 solution of mercuric oxycyanide in destroying the bacillus of tuberculosis?**

M.D., Idaho.

ANSWER.—Recently new methods (Brewer, J. H.: The Antibacterial Effects of the Organic Mercurial Compounds, THE JOURNAL, May 20, 1939, p. 2009) and new mediums (Brewer: *J. Bact.* **39**:10 [Jan.] 1940) have been developed for testing the germicidal properties of mercurial compounds. These studies cast doubt on results reported in the past. Mercurial compounds are highly bacteriostatic and may prevent the growth of bacteria without killing them. Studies employing newer methods will be necessary before this question regarding the efficiency of mercuric oxycyanide in destroying the bacillus of tuberculosis can be answered.

HYDROQUINONES AND BODY FLUIDS

To the Editor:—**I am doing some work on body pigments and find that the monobenzyl ether of hydroquinone crosses my path. Could you tell me if this substance exists normally in the blood or other body fluids?**

Melverton E. Trainor, M.D., Los Angeles.

ANSWER.—There is no evidence for and no reason to suspect the presence of the monobenzyl ether of hydroquinone in blood or other body fluids. It is possible that minute traces of hydroquinone or pyrocatechin or similar phenols may be present in the body fluids. The concentration of these in the blood might be increased by a high vegetable diet. Epinephrine is a pyrocatechin derivative but probably is present in systemic blood in concentrations of not higher than 1:20,000,000.

Medical Examinations and Licensure

COMING EXAMINATIONS

STATE AND TERRITORIAL BOARDS

Examinations of state and territorial boards were published in THE JOURNAL, March 16, page 1009.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: Part II, May 1-2; Part III, June or July, to be given in medical centers having five or more candidates desiring to take the examination. Exec. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

SPECIAL BOARDS

AMERICAN BOARD OF ANESTHESIOLOGY: An Affiliate of the American Board of Surgery. *Oral.* Part II. New York, June 10-11. Applications must be received 60 days prior to examination. Sec., Dr. Paul M. Wood, 745 Fifth Ave., New York.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOGY: November 1940. *If a sufficient number of applications were received before March 1 an examination will be held at New York, June 10-14.* Sec., Dr. C. Guy Lane, 416 Marlboro St., Boston.

AMERICAN BOARD OF INTERNAL MEDICINE: *Oral.* Following the meeting of the American College of Physicians and in advance of the meeting of the American Medical Association. Applications must be on file six weeks in advance. *Written.* October 21. Applications must be on file by September 1. Sec., Dr. William S. Middleton, 1301 University Ave., Madison, Wis.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *General oral and pathologic examinations (Part II) for all candidates (Group B)* will be conducted in Atlantic City, N. J., June 7-10. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh (6).

AMERICAN BOARD OF OPHTHALMOLOGY: Oral. New York, June 8-10; Cleveland, Oct. 5. Sec., Dr. John Green, 6830 Waterman Ave., St. Louis.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: Chicago, June 15-16. Applications must be on file on or before April 15. Sec., Dr. Fremont A. Chandler, 6 North Michigan Ave., Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY: New York, June 3-5. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

AMERICAN BOARD OF PATHOLOGY: New York, June 10-11. Sec., Dr. F. W. Hartman, Henry Ford Hospital, Detroit.

AMERICAN BOARD OF PEDIATRICS: Memphis, Tenn., Nov. 17, preceding the annual meeting of the American Academy of Pediatrics. Sec., Dr. C. A. Aldrich, 723 Elm St., Winnetka, Ill.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: Cincinnati, May 17-18. Sec., Dr. Walter Freeman, 1028 Connecticut Ave. N.W., Washington, D. C.

AMERICAN BOARD OF RADIOLOGY: New York, June 7-10. Sec., Dr. Byrl R. Kirklin, 102-110 Second Ave., Rochester, Minn.

AMERICAN BOARD OF SURGERY: Various centers, April 1. Sec., Dr. J. Stewart Rodman, 225 South Fifteenth St., Philadelphia.

Kansas December Examination

Dr. J. F. Hassig, secretary, Kansas State Board of Medical Registration and Examination, reports the written examination held at Topeka, Dec. 12, 1939. An average of 75 per cent was required to pass. Four candidates were examined, all of whom passed. Thirteen physicians were licensed by reciprocity and two physicians were licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Northwestern University Medical School		(1939)	82
University of Kansas School of Medicine		(1939)	84.8
University of Minnesota Medical School		(1938)	90.1
University of Wisconsin Medical School		(1938)	90.7

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Arkansas School of Medicine		(1930), (1938, 2)	Arkansas
University of Georgia School of Medicine		(1935)	Georgia
University of Illinois College of Medicine		(1938)	Missouri
University of Minnesota Medical School		(1931)	Michigan
St. Louis University School of Medicine		(1921) (1938), (1939)	Illinois, Missouri
Washington University School of Medicine		(1935), (1937)	Missouri
Jefferson Medical College		(1934)	Penna.
Medical College of Virginia		(1931)	Virginia

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
Stanford University School of Medicine		(1938)	N. B. M. Ex.
Northwestern University Medical School		(1939)	N. B. M. Ex.

Kentucky December Examination

Dr. A. T. McCormack, secretary, State Board of Health of Kentucky, reports the written examination held at Louisville, Dec. 5-7, 1939. The examination covered eleven subjects and included 110 questions. An average of 70 per cent was required to pass. Five candidates were examined, all of whom passed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
College of Medical Evangelists		(1939)	86
University of Louisville Medical Department		(1909)	76
University of Louisville School of Medicine		(1936) 87, (1939)	84
Cornell University Medical College		(1934)	86

Twenty-four physicians were licensed by reciprocity and one physician was licensed by endorsement from August 1 through November 16. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Howard University College of Medicine		(1937)	Missouri
Atlanta Medical College		(1914)	Georgia
University of Georgia School of Medicine		(1938)	Georgia
Rush Medical College		(1933)	Illinois
The School of Medicine of the Division of Biological Sciences		(1935)	Michigan
Indiana University School of Medicine		(1936)	Indiana
State University of Iowa College of Medicine		(1936)	Iowa
University of Louisville School of Medicine		(1917)	Washington
Boston University School of Medicine		(1924)	New York
Harvard Medical School		(1935)	New Hamp., New York, (1937) Illinois
Eclectic Medical College, Cincinnati		(1938)	Ohio
Ohio State University College of Medicine		(1935)	W. Virginia
Western Reserve University School of Medicine		(1935)	Ohio
Temple University School of Medicine		(1937)	Penna.
University of Tennessee College of Medicine		(1935) (1936)	Mississippi, Tennessee
Vanderbilt University School of Medicine		(1936), (1937) (1938, 2)	Tennessee, Mississippi
Baylor University College of Medicine		(1938)	Texas
Marquette University School of Medicine		(1933)	Wisconsin

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
University of Rochester School of Medicine		(1933)	N. B. M. Ex.

Maryland December Report

Dr. John T. O'Mara, secretary, Board of Medical Examiners of Maryland, reports the written examination held at Baltimore, Dec. 12-15, 1939. The examination covered nine subjects and included ninety questions. An average of 75 per cent was required to pass. Thirty-eight candidates were examined, twenty-nine of whom passed and nine failed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
George Washington University School of Medicine		(1935) (1936) 81, (1938) 84, 86, (1939) 84	78.1,
Johns Hopkins University School of Medicine		(1937) (1939) 81.1, 84, 85.3, 87, 87.4	79,
University of Maryland School of Medicine and College of Physicians and Surgeons		(1938) 85, (1939) 91.1,	80.1, 85
Harvard Medical School		(1937) (1939)	87.2
University of Minnesota Medical School		(1935)	78.3
New York Medical College and Flower Hospital		(1939)	87
University of Oregon Medical School		(1939)	86
Hahnemann Med. College and Hospital of Philadelphia		(1939)	78
Jefferson Medical College of Philadelphia		(1936)	83.3
Meharry Medical College		(1938)	78
University of Wisconsin Medical School		(1939)	83.2
McGill University Faculty of Medicine		(1939)	85.4
Medizinische Fakultät der Universität Wien		(1924) (1925) 79, (1935) 80.4	84,
Christian-Albrechts-Universität Medizinische Fakultät, Kiel		(1920)	78
Université de Genève Faculté de Médecine		(1938)	77.4

School	FAILED	Year Grad.	Per Cent
Medizinische Fakultät der Universität Wien		(1930) (1932) 52	76.4,
Universität Rostock Medizinische Fakultät		(1920)	74.3
Magyar Királyi Erzsébet Tudományegyetem Orvostudományi, Pecs		(1935)	40
Regia Università degli Studi di Bologna. Facoltà di Medicina e Chirurgia		(1937)	73.2
Regia Università degli Studi di Messina. Facoltà di Medicina e Chirurgia		(1934)	65.4
Regia Università degli Studi di Roma. Facoltà di Medicina e Chirurgia		(1935)	72
Regia Università degli Studi di Siena. Facoltà di Medicina e Chirurgia		(1936)	67.4
Université de Genève Faculté de Médicina		(1927)	65.3

Twelve physicians were licensed by reciprocity and nine physicians were licensed by endorsement from September 26 through November 27. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
George Washington Univ. School of Medicine		(1925), (1934)	Dist. Colum.
American Medical Missionary College, Chicago		(1903)	Illinois
Maryland Medical College		(1912)	Penna.
University of Nebraska College of Medicine		(1934)	Nebraska
New York Homeopathic Medical College and Hospital		(1930)	California
University of Rochester School of Medicine		(1934)	Iowa
Jefferson Medical College of Philadelphia		(1916)	Penna.
Temple University School of Medicine		(1919)	Penna.
University of Pennsylvania School of Medicine		(1934)	Penna.
Medical College of the State of South Carolina		(1936)	S. Carolina
Medical College of Virginia		(1916)	Virginia

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
College of Medical Evangelists		(1938), (1939)	N. B. M. Ex.
George Washington University School of Medicine		(1937)	N. B. M. Ex.
Johns Hopkins Univ. School of Medicine		(1933), (1934, 2)	N. B. M. Ex.
Harvard Medical School		(1926), (1933)	N. B. M. Ex.
Duke University School of Medicine		(1936)	N. B. M. Ex.

Book Notices

The Tissues of the Body: An Introduction to the Study of Anatomy. By W. E. Le Gros Clark, F.R.S., Dr. Lee's Professor of Anatomy in the University of Oxford, Oxford. Cloth. Price, $5.50. Pp. 372, with 109 illustrations. New York & London: Oxford University Press, 1939.

Until recently the teaching of anatomy has been mainly confined to the study of the end products of structural organization, that is, to the structure of mature organisms. Educators now are realizing the importance of knowledge of the fundamental principles of the growth, differentiation and structural adaptation of living tissues. This shifting focus of attention has not been much reflected in textbooks, and that is why this book was written. In his own department the author introduces the subject of anatomy to the students by course of lectures dealing with general problems of organization of living tissues. These lectures have been amplified here in book form to make available to students information which is generally found only in anatomic journals. Simple dissection with scalpel and forceps is the time honored technic in the study of anatomy. In recent years, by the construction of special apparatus, microdissection has been developed involving the use of exceedingly fine glass needles, micropipets, microspatulas and attachments whereby the points of these tiny instruments can be manipulated in the field under the microscope. Single cells can now be isolated and dissected and it is possible to study the effects of injected chemicals into the cytoplasm or the results of experimental mutilation of the cell. Recent anatomic research, especially by American anatomists, has evolved a technic which enables mammalian tissues to be studied by constructing transparent chambers in the ears of rabbits, allowing continuous observation with the use of high power objectives of the same cellular structures for months or even years. From such studies much has been learned regarding tissue growth and differentiation. Another method of demonstrating the details of living cells is that of vital staining. The study of growing tissues in vitro has been made possible by the technic of tissue culture which was initiated by an American anatomist, R. G. Harrison, in 1907. The author reviews the results of these methods of anatomic research under such headings as the anatomy of the cell, early development of the human embryo, the macrophage system, cartilage, ossification and the structure, growth, regeneration and repair of muscle, of blood vessels, of glands, of the skin, of the nerves and of other tissues. The author reviews, in explanation of the underlying principles of neural differentiation, the theory conceived by Kappers in 1907, to which he applied the term neurobiotaxis, the principle of which expresses the tendency of nerve cells to move toward the source of the impulses by which they are predominantly affected. For example, a group of nerve cells, *a*, which are mainly activated by stimuli reaching them from direction *b*, will tend gradually to shift their position toward *b*. This migratory tendency, which is manifested in embryologic as well as in evolutionary development, may lead to a displacement of nerve cells some considerable distance away from the site of their primary differentiation. The basic mechanism of neurobiotaxis, the author says, is an expression of some kind of tropism. The evidence suggests that it is a bio-electrical phenomenon associated with changing potentials in the developing and functioning neurons. The discussion of Kapper's hypothesis leads us to wonder how far the continued investigation of such minute quantities of electrical energy will go to explain the basis of the peculiar structure and functions of nervous tissue.

Les "pièges" de la chirurgie en diagnostic et thérapeutique: Erreurs et fautes ou faits présumés tels conditions et limites de la responsabilité. Par le Prof. E. Forgue, membre de l'Académie de chirurgie, et Prof. Aimes, professeur agrégé à la Faculté de Montpellier. Cloth. Price, 120 francs. Pp. 509. Paris: Masson & Cie, 1939.

This book is concerned primarily with an exposition of surgical errors and a definition of the legal responsibilities of the surgeon. The volume is divided into three parts. The first part, consisting of seven chapters, deals with errors of observation and diagnosis, of indications for operation, and of prognosis and technic. Means of avoiding these errors are indicated and certain fundamental technical rules are given. The second part, consisting of eleven chapters, is devoted to the legal responsibilities of the surgeon with particular attention to the authorization for and indications of operation, errors in asepsis and antisepsis, overlooked foreign bodies, and tetanus and burns. The third part, which is the most extensive, considers surgical disorders involving special regions of the body. The various factors influencing diagnosis and prognosis are enumerated and discussed. The authors' purpose, "to recognize one's errors and to find out their causes," has been well fulfilled. An appended bibliography would have enhanced the reference value of this book enormously.

Pioneers in Acute Abdominal Surgery. By Zachary Cope, B.A., M.D., M.S., Surgeon to St. Mary's Hospital, Paddington. Cloth. Price, $1.75. Pp. 135, with 38 illustrations. New York & London: Oxford University Press, 1939.

This fascinating monograph is based on the Bolingbroke Lecture delivered by the author before the South-West London Medical Society in May 1938. It illustrates graphically the truism that the historian occupies a more authoritative position than the prophet, for in this monograph there are detailed the deeds of bold adventurers in surgery which, though uninviting at the time, became milestones in the successful progress of abdominal surgery. The steps leading to the successful management of obstruction of the colon, intussusception, strangulation of the intestine, perforative peritonitis, ectopic gestation and appendicitis are presented in their logical order and the figures of the medical men who were leading actors in the drama are shown in the interesting illustrations.

With the exception of Pasteur's and Lister's work leading to asepsis in surgery, perhaps the most important single contribution in the development of abdominal surgery was the development of the Lembert stitch. In 1812 Benjamin Travers published an article on the process of nature in repairing injuries of the intestine in which he stated that the ready disposition of peritoneal surfaces to adhere to one another was most important in the healing process. It was Dupuytren, however, who in his efforts to close intestinal fistulas by means of an enterotome or crushing clamp inspired Lembert to apply the principle to the wider field of end to end sutures of the intestine by emphasizing the importance of application of serosa to serosa in intestinal suture. This contribution by Lembert, "Mémoire sur l'entéroraphie," was published in 1826.

The story of the development of the modern treatment of appendicitis is well described, beginning with the description of disease of the appendix by Addison and Bright in 1838. They not only recognized the occurrence of peritonitis from perforation of the appendix but also gave a good account of the pathology and symptoms of the primary disorders of the appendix. The first surgery carried out in connection with appendicitis was for peritonitis following its perforation. Henry Hancock in 1848 successfully operated on what was probably an appendical abscess fourteen days after the onset of the attack. A fecalith was discharged in the pus, which he said "had been impacted in and escaped by ulceration from the vermiform appendix." Nineteen years later Willard Parker advocated opening perityphilitic abscesses at an early stage in the disease. During the next fifteen years, eighty cases of operation for appendical abscess were reported. In 1884 Samuel Fenwick advocated early operation for perforation of the appendix, but it was not until the paper by Reginald Fitz in 1886 that the medical profession awoke to the importance of early diagnosis and operation before rupture of the appendix. Writing on diffuse peritonitis, Krönlein in 1886 recorded the first printed account of the removal of the appendix. His patient died. The first successful operation for removal of the inflamed appendix was performed by R. J. Hall, of New York, in 1886 but it was removed during an operation for irreducible hernia in which the inflamed appendix was found in the sac. Thomas G. Morton, of Philadelphia, diagnosed appendicitis, opened an abscess and first successfully removed the appendix. It remained for Sands, McBurney, Treves, Murphy and Senn to develop the operation and the indication for it with which the world is now familiar.

Dr. Cope's monograph is well written, has numerous quotations from the original historic articles and, in effect, follows the advice of Governor Alfred Smith, who frequently would say when controversial matters were under discussion "Let us examine the record."

Textbook of Medical Treatment. By Various Authors. Edited by D. M. Dunlop, B.A., M.D., F.R.C.P., Professor of Therapeutic and Clinical Medicine, University of Edinburgh, Edinburgh, L. S. P. Davidson, B.A. M.D., F.R.C.P., Professor of Medicine, University of Edinburgh, and J. W. McNee, D.S.O., D.Sc., M.D., Physician, H. M. the King in Scotland. With a foreword by A. J. Clark, B.A., M.D., D.P.H., Professor of Materia Medica, University of Edinburgh. Cloth. Price, $8. Pp. 1,127, with illustrations. Baltimore: William Wood & Company, 1939.

Most textbooks on general medicine are often inadequate in practical therapeutics. Treatment is often touched on delicately and inadequately owing either to the exigencies of space or to the unwillingness on the part of the authors to tread on controversial subject matter. This book was therefore written for the express purpose of filling in that gap. Each chapter is written by a separate contributor and the editorial task is placed in the capable hands of Drs. Dunlop, Davidson and McNee. Most of the subjects covered in a general textbook of medicine are considered and particularly those of special interest to the man in general practice. The subject matter is addressed to students and practitioners and not to specialists. The material is current, down to date and conservative. Chapters on subjects like common disorders of infancy and childhood, industrial diseases and psychotherapy in general practice add considerably to the value of the book for the man in general practice. There are a number of statements and therapeutic suggestions which do not coincide with generally accepted points of view in this country but they are relatively infrequent and unimportant. The contents have been thoroughly edited and little space is wasted. At the end of the book is a special chapter on technical procedures used in treatment and a concise discussion of oxygen therapy. Many men engaged in the practice of medicine will find the information contained in this book both practical and useful. The book fulfils its modest purpose in a creditable manner and should be well received by the practitioner of medicine.

The Flowering of an Idea: A Play Presenting the Origin and Early Development of The Johns Hopkins Hospital. By Alan M. Chesney. Cloth. Price, $1.50. Pp. 87. Baltimore: Johns Hopkins Press, 1939.

This play, written for the celebration of the fiftieth anniversary of the opening of Johns Hopkins Hospital, was presented in Baltimore May 4, 1939. The first scene is an imaginary conversation which takes place in the evening on the veranda of the country estate of Johns Hopkins in June 1866 between Mr. Hopkins and George Peabody, formerly of Baltimore but now of London. Mr. Hopkins, a Quaker who never married, does not smoke or drink except on the doctor's orders. He invites Mr. Peabody to dinner to talk over the disposition of his fortune, as he is now 71 years of age. Mr. Peabody, the story goes, has already made arrangements to leave most of his fortune to provide an academy of music and a gallery of art for Baltimore. He would like to found a university or college in Baltimore but his fortune is not large enough. The latter suggestion strikes Mr. Hopkins favorably, and before retiring he apparently writes his will providing for a hospital to form part of the medical school of a university. The second scene shows the board of trustees in session March 11, 1873, receiving a letter from Mr. Johns Hopkins pointing out that he has entrusted to their care 13 acres of land in Baltimore on which he desires them to erect a hospital. The duties of the trustees and the desires of Mr. Hopkins in relation to the hospital are broadly stated. Then the president of the board, Mr. Francis T. King, announces the members of committees authorized at a previous meeting: the building committee, finance committee, committee on by-laws and committee on miscellaneous business. The third scene shows the meeting of the board of trustees Feb. 20, 1877, at which Dr. John Shaw Billings reports on the progress he has made on the plans for the new hospital. Dr. Billings, who went abroad the previous year to study the best hospitals in Europe, has had an architect draw up layout plans of the buildings as he thinks they should be built, on the pavilion system. He estimates that the hospital as planned when furnished will cost about $1,200,000. The board of trustees unanimously approves Billings' plans. The fourth and last scene takes place at the opening of the hospital May 7, 1889. Among those present are the governor of Maryland, the mayor of Baltimore, the surgeon generals of the Army, Navy and Public Health Service, the trustees, including L. N. Hopkins, a nephew of Johns Hopkins and secretary of the board, and two women, the only surviving sister and the sister-in-law of Johns Hopkins. In a principal address at the opening ceremonies Dr. Billings describes the new hospital, the principles on which it is founded and the uses to which it is dedicated. Mr. Daniel C. Gilman, president of Johns Hopkins University, points out that thirteen years ago the university began its work and now the hospital, the gift of the same benefactor, throws open its doors. Here science and charity, knowledge and pity, skill and sympathy are installed in the service of mankind. He compares the founding of Johns Hopkins Hospital to Guy's Hospital in London. With the university on the one hand and the hospital on the other, he asks "Is there anything wanting? Yes, there is still a great want to be supplied, an arch to rest on these pillars. An institute of medicine and surgery, a college of physicians and surgeons, a medical school, the office of which shall be to promote the training of young physicians, and the encouragement of medical science." The play closes with a brief statement by Governor Jackson, of Maryland, in which he declares the Johns Hopkins Hospital opened and dedicated to the service of mankind.

Synopsis of Pediatrics. By John Zahorsky, A.B., M.D., F.A.C.P., Professor of Pediatrics and Director of the Department of Pediatrics, St. Louis University School of Medicine. Assisted by T. S. Zahorsky, B.S., M.D., Instructor in Pediatrics, St. Louis University School of Medicine. Third edition. Fabrikoid. Price, $4. Pp. 430, with 144 illustrations. St. Louis: C. V. Mosby Company, 1939.

Synopses of the various medical specialties can be useful when properly employed. Medical students can use them as a guide to their work. The general practitioner can utilize such a synopsis for quick and easy reference. In the present edition of this excellent work, many paragraphs have been rewritten and new sections added. More attention has been given to the material on treatment. Particular stress is laid on the clinical features of diseases. The book contains no reference to the literature, since it is intended particularly to give the student the elements of pediatrics, which can later be complemented by the employment of a more comprehensive textbook and a study of the literature. Considering the small size of the work, an abundance of excellent material is furnished.

Your Child's Food. By Miriam E. Lowenberg, Assistant Professor of Foods and Nutrition and Child Development, Iowa State College, Iowa City. Second edition. Cloth. Price, $2.50. Pp. 299, with 14 illustrations. New York & London: Whittlesey House, McGraw-Hill Book Company, Inc., 1939.

The problem of preparing meals for children is often complicated because of anorexia in the child, particularly in homes where the matter of eating receives undue attention and the refusal to eat is used as a method of gaining ascendency over the parents. Consequently the preparing of food in such a way as to tempt the child's appetite is often worth while. Not only will this book aid a great deal in understanding feeding problems, but it includes many new practical ideas for feeding. The manner in which new foods should be presented to the child is discussed in great detail. Numerous recipes, as well as diets, are included so that any parent can find a selection which will suit the child's particular need. The author, because of contact with many mothers and children, and a widespread experience in matters pertaining to diet, has prepared a volume that may be recommended highly to mothers, nursery workers and nurses in pediatric hospitals, as well as to physicians.

Public Health Dentistry and Health Security: A Text-Workbook for Students and Practitioners. By Alfred J. Asgis, Sc.B., M.A., D.D.S., Assistant Professor of Oral Surgery, New York University College of Dentistry, New York. Boards. Price, $3.50. No pagination. New York: Clinical Press, 1939.

The outlines of lectures with accompanying quiz questions, bibliographies and examination are intended as the basis of a course to fit dentists for positions in the public health service. As a pioneer effort it gives an impression of uncertainty as to subject matter and considerable superficiality in treatment of some material. This is especially striking in the section on "Health Security and Dental Socio-Economics," and particularly in the treatment of health insurance, state medicine and socialized medicine, where the bibliography includes almost nothing except the writings of insurance propagandists and the outline shows a lack of any thorough study of the subject.

Human Histology: A Guide for Medical Students. By E. R. A. Cooper, M.D., M.Sc., Lecturer in Histology, University of Manchester. With a foreword by F. Wood Jones, F.R.S., F.R.C.S., Professor of Anatomy, University of Manchester. Cloth. Price, 16s. Pp. 423, with 237 illustrations. London: H. K. Lewis & Co., Ltd., 1939.

The main purpose of this book is to familiarize the student with the subject matter so as to ensure passing examinations as well as to provide a companion textbook for pathology. The main body of the text is scanty and exceedingly didactic. More than a fourth of the volume is concerned with the nervous system and the organs of special sense. At the end of each of the twenty-one chapters there are instructions for practical exercises on the work covered. The material used for the illustrations is mainly human and many of the photographs are of low magnification. In many of these as well as in those of higher magnification the original necropsy material is so autolyzed that normal relations and structures are destroyed. Though published within the past year, the short discussions of function following some of the chapters contain antiquated ideas. As a textbook of histology it does not come up to the standard of many others already available in English.

A Laboratory Guide to Microscopic Anatomy with Directions for Laboratory Studies in Cytology, Histology, Organology, and Embryology. By Rafael Hernandez, M.D., Professor of Microscopic Anatomy, School of Medicine, Meharry Medical College, Nashville. Paper. Price, $3. Pp. 108. Ann Arbor, Michigan: Edwards Brothers, Inc., 1939.

This is a large, somewhat cumbersome looseleaf book. The text is printed on but one side of the page and between the direction sheets one or more blank sheets are inserted for drawings. The whole field of histology and microscopic anatomy is detailed exhaustively. This makes it a sufficient guide for the particular course for which it was designed but a difficult one to adapt to any other unless the specific material described in it is available. On the whole, such a detailed laboratory guide would serve to inhibit rather than develop initiative and investigative spirit in the student. One gets the impression that if the directions are followed exactly there is nothing more that can be learned about a particular organ or tissue. In the appendix a list of group problems is included, but here again the directions for carrying out the work make it sound like just another assignment rather than an investigative problem which the students would enjoy.

Outline of Physiology. By William R. Amberson, Ph.D., Professor of Physiology, University of Maryland, Baltimore, and Dietrich C. Smith, Ph.D., Associate Professor of Physiology, University of Maryland. Cloth. Price, $4. Pp. 412, with 177 illustrations by Norris Jones, Instructor in Scientific Illustrating, Swarthmore College, Swarthmore, Pennsylvania. Baltimore: Williams & Wilkins Company, 1939.

This little volume contains an amazing amount of fundamental information on every phase of physiology. Brief historical introductions are given for the major sections of the subject and the thesis is aptly illustrated with original drawings, diagrams and plates. While the volume is primarily intended for introduction to college biology and physiology, the medical student might very well read every word first before undertaking to digest the more complex textbooks in medical physiology. The simple but concise and scientifically accurate style will aid greatly to make the more weighty treatment of the subject comprehensible.

Cognitive Psychology. By Dom Thomas Verner Moore, Ph.D., M.D., Monk of the Order of St. Benedict, Professor of Psychology, Catholic University of America, Washington, D. C. Cloth. Price, $3.75. Pp. 636, with illustrations. Chicago, Philadelphia & New York: J. B. Lippincott Company, 1939.

Cognitive psychology is that branch of general psychology which studies the way in which the human mind receives and interprets impressions from the external world. A complete account of the literature and a digest of all the experimental work goes beyond the scope of the present book, which is intended as a textbook for students of psychology. However, the attempt has been made to cite enough data to give reasonable basis for the conclusions presented and at the same time not to neglect important evidence of a contrary character. Because of the student's desire and right to ask of the teacher a definite stand on various problems, such a stand has been taken whenever the evidence allows it and some effort has been made to iron out the conflicts in apparently contradictory lines of experimental evidence. The present textbook faces also metaphysical problems, because the tendency to avoid philosophical issues is unsatisfactory. This volume will be of service not only for students of normal psychology but also for students of psychiatry.

Handbook of Bacteriology for Students and Practitioners of Medicine. By Joseph W. Bigger, M.D., Sc.D., F.R.C.P.I., Professor of Bacteriology and Preventive Medicine, University of Dublin. Fifth edition. Cloth. Price, $4.25. Pp. 466, with 100 illustrations. Baltimore: William Wood & Company, 1939.

This book was undertaken to supply the need for a shorter textbook in bacteriology suitable for medical students and for practitioners who have not specialized in bacteriology. The author endeavors to present the practical aspects of the subject, to reduce the theoretical, and to emphasize the fact that bacteria are important to the physician not in themselves but only as the causes of disease. The student will find here the more important factors relating to bacteria as they affect man. If, when he assimilates the contents of this book, he wishes to learn still more bacteriology, he should consult a larger textbook. This book has come to be used in medical schools in various parts of the world. It has reached the fifth edition in a period of thirteen years and has been translated into the Spanish language. The present edition incorporates the new work in bacteriology which appears to the author to be sound and important to medical students. Rigorous editing and condensation of the less important matter permit this edition to occupy only twelve pages more than did the previous edition. Many of the older illustrations have been replaced and their total number increased by seven.

A Synopsis of Regional Anatomy. By T. B. Johnston, M.D., Professor of Anatomy, University of London, Guy's Hospital Medical School, London. Fourth edition. Cloth. Price, $4.50. Pp. 462, with 17 illustrations. Philadelphia: Lea & Febiger, 1939.

Students will find in this book a reliable indication of what facts in gross anatomy are of the most importance in clinical work. The book will find its greatest usefulness when read in connection with a review study of a dissected part or of a skeleton. To encourage the student to frequent the dissecting room and to refer constantly to dissected parts while revising his work, the author has omitted illustrations from every part of the book except that dealing with the central nervous system. He advises that the book should not be consulted until the actual work of dissection has been completed and revision has been undertaken. In this edition the whole text has been revised and new material added, especially in the section on the central nervous system.

An Introduction to Human Anatomy. By Clyde Marshall, M.D., Assistant Professor of Anatomy, School of Medicine, Yale University, New Haven, Conn. Second edition. Cloth. Price, $2.50. Pp. 388, with 257 illustrations. Philadelphia & London: W. B. Saunders Company, 1939.

This is a simple textbook written from the point of view of an anatomist. It contains, in addition to the facts of anatomy, brief accounts of the functional activities of the different organs. Instead of starting with the various tissues and cells as some textbooks do, it introduces the student immediately to gross anatomy and later comes to the finer structures. The book is well written and well illustrated, fourteen of the illustrations being in color. The aim of the author has been not to teach anatomy solely for its own sake but to show its relation to the other sciences and to point out some of its everyday applications.

Recent Advances in Hæmatology. By A. Piney, M.D., Ch.B., M.R.C.P., Assistant Physician, St. Mary's Hospital for Women and Children, London. Fourth edition. Cloth. Price, $5. Pp. 312, with 42 illustrations. Philadelphia: P. Blakiston's Son & Co., Inc., 1939.

The previous edition was published eight years ago. Since that time numerous advances have been made, which the author has incorporated in this edition. The text has been thoroughly revised and a few new colored plates have been added. The same general plan has been followed in the text. The chapter on anemias, leukemias, hemorrhagic diseases and hypoplastic and aplastic states of the blood-forming organs have been completely revised. The former editions of this book were well received and the present edition should enjoy the same popularity.

Miscellany

THE "EMERODS" IN THE BOOK OF SAMUEL

OTTO NEUSTATTER, M.D.
BALTIMORE

The description of the plague of the Philistines in the book of Samuel is one of the most interesting in the Bible, as it presents the one report of transmission of an epidemic from one place to others and names a distinct pathologic sign. It is, however, very hard to define what the condition was, and scores of translations have been tried to explain with what kind of morbid condition the sufferers were smitten.

In a paper read at the fifteenth annual meeting of the American Association of the History of Medicine at Atlantic City in April 1939, Church[1] brought interesting material to show the need of revising our idea of the Columbian origin of syphilis. He tried to prove not only by documentary evidence, as Sudhoff did in a series of publications, but by roentgenograms of mummies, that this theory is erroneous.

Referring to the constant confusion of yaws, leprosy and syphilis, Church gave on this occasion, as an example of the errors arising in translations, the pathologic change mentioned in Samuel in the word rendered "emerods." "Frequently," he says, "medical interpreters accept the translation of lay students without criticism or knowledge of the real meaning of the essential words involved. A good example of this error is the translation of the word 'Emerods' in II Samuel (7-8). This word originates far back of the historical times in the Bible; (the) original was "ophelim" or "omphelim" . . . When the Hindu Yogi thousands of years ago made this sign and said 'Om,' he was indicating the female. The word Phthallus has come over into Greek and Latin with the same significance that it has in medicine today. So, instead of Emerods, 'They had woman-man diseases on their secret parts,' and the context explains itself as an epidemic of sexual diseases."

It was not the first time that the theory was advanced that this scourge was syphilitic. In 1662 Trapp said that some understand it as lues venerea. Hensler (1783), the historian of syphilis, named it "crystalline." The German medical historian Haeser called the emerods "Condylomata at anum," which were identified with syphilitic condylomas. Friedreich in 1848 credited this interpretation of condylomas. J. F. von Meyer in his amendment of Luther's version renders it as "feigwarzen," as does also the Berlenburger Bibel, but here the insight into the meaning of the word as signifying a syphilitic alteration cannot be surmised. Jüttings Biblisches Wörterbuch, however, explains feigwarzen as "[syphilitic] ulcers or boils, like figs, or hemorrhoidal tumors."

The argument which Church gives for his hypothesis is new. The question arises, however, whether he has not committed himself in the same way for which he blames the others.

I do not want to give here a long account of the translation which the word "ophalim" or "apholim" has had through the centuries. I shall do that in a paper I am preparing on the pest of the Philistines. So far the official translations, in my opinion, are all unsatisfactory. The Protestant English Bibles, by the way, no longer translate "emerods."[2] This uncommon word crept into the English Bibles, including the Authorized Version of the King James Bible (1611). It is nothing but a corrupt form of the word "hemorrhoids" taken over in the fifteenth century from the French, where the h is silent. Since the publication of the Revised Version (O. T. 1885) it has been translated by the neutral word "tumors," with a marginal note "or plague-boils; as read by the Jews 'Emerods.'"

Following are a few remarks concerning Church's explanation:

Church cites "II Samuel (7-8)." This is a mistake. The corresponding terms in Hebrew are to be found in I Samuel 5 and 6, where the plague is described with which the Philistines were stricken. The word apholim occurs in but one other passage in the Bible, the word techorim nowhere else in it.

It is a most precarious thing to compare Semitic and Aryan words. Luther has been blamed for having tried to derive the word tachs, or dachs, from the Hebrew "tahas," where the covering of the ark of the covenant with badger skins is described.

Besides, where does Church get the omphalim? What is the basis of his conjecture? The Hebrew word is one word consisting of the three consonants עפל (the "im" is only the plural ending); the vowels, as will be known, are only of secondary value. They may assume great importance in the reading of the word, as is the case here. For, on the basis of vocalization, it is hinted to the reader to pronounce the word not as such but as its less objectionable synonym techorim. However, the main objection to the separation into two roots remains untouched by this.

Now ophel has a quite distinct meaning. It indicates something swollen, prominent, a hill. The southeastern hilly part of Jerusalem was therefore called "Ophel." No difference of opinion exists about this rendering, only about the pathologic alteration it is used for. Therefore the idea that a woman-man disease is meant seems absolutely void of any etymologic basis.

But the theory that it was a sexual disease, especially syphilis, is untenable from a medical standpoint. I only have to mention that the disease is described as a most violent, painful and lethal epidemic. Emerods, of course, are not such a plague, but is syphilis? If the description did not attribute such alarming symptoms to the scourge, one might, from the one other place in the Bible where apholim are mentioned (Deuteronomy 28:27), come to the conjecture that it was a skin disease of some kind. For there it is named among other cutaneous disorders. The wording of this passage is "The Lord will smite you with the boil of Egypt, and with the emerods, and with the scab, and with the itch, whereof thou canst not be healed."

But two unknown qualities do not make a known one. Supposing the word meant syphilis here, it could not indicate the same in Samuel's narrative. One has to go back to its original meaning and try to find it from this angle. The phrase "on their secret parts" may also contribute to the idea of a sexual disease. In many countries the term secret disease is a synonym for genital disorders. But the corresponding word in Hebrew is controversial. It is translated wholly otherwise: "Boils broke out on them" or "He smote them with the boils." Here nothing is said about secret places. Others specify the secret places in a way that pretty well excludes the sexual origin: in secretori parte natium, i. e. the anus. Others again think that it is a disease which was secret in that it was never known before. Some regard it as an expression pointing to the seat of the disease in a hidden place in the bowels, secret in that it is not visible. So no clue can be taken for the diagnosis of syphilis from the phrase secret places. Another argument against the supposition of a sexual disease is given by the word He smote the men of the city both small and great, and emerods broke out on them. Children will hardly have acquired a woman-man disease. In another modification of the narrative which is little known, pregnant women and infants are said to have been the most numerous victims. The milk cows whose calves had to be brought home before they were used to draw the cart with the ark were chosen as a symbol of these victims. This version would also forbid the diagnosis of woman-man disease.

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Dr. Neustatter was formerly director of the Museum of History of Hygiene, Dresden, Germany.

1. Church, Franklin H.: Syphilis of the Center of the Face, Bull. Hist. Med. 7: 705 (July) 1939.

2. The same version is found in the edition of the American Revision Committee, New York, 1901. The note "as read by the Jews 'Emerods'" is not correct. The New Translation of the Holy Bible published with the approbation of Cardinal Gibbons, Archbishop of Baltimore, also gives the version "emerods." It is therefore the Jews, but not only the Jews and not all Jewish translators. The widespread translation of Leeser gives "tumors."

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Hospitals: Agreement to Refrain from Operating Hospital; Assignability of Medical Contracts.—The defendants, a physician and his wife, were owners and operators of the Beaver Valley Hospital in Floyd County, Ky. They had contracts with numerous local industries to provide hospitalization to employees and their families, deductions being made from the wages of the men and paid to the hospital. Likewise, county patients were cared for under contract with the fiscal court. In January 1935 the defendants sold the hospital to the plaintiffs and agreed not to own or operate a hospital in Floyd County for ten years. The defendants further agreed to and subsequently did assign to the "Beaver Valley Hospital, Inc." all contracts with coal and gas companies, the United Mine Workers of America and the fiscal court. The plaintiffs, on their part, agreed to permit the defendant physician to use the facilities of the hospital for his patients. A little more than a year thereafter the defendants constructed and commenced the operation of a hospital in Knott County about 300 yards from the Floyd County line and about 10 or 12 miles from the plaintiffs' hospital. Thereafter the plaintiffs sought an injunction to restrain the defendants from violating the restrictive agreement and from a judgment in effect denying the injunction the plaintiffs appealed to the Court of Appeals of Kentucky.

The defendants contended that the restricted covenant was void because against public policy in that it undertook to suppress competition and to give the plaintiffs a monopoly. In answering this contention, the court pointed out that such covenants are recognized as legal if reasonable and limited as to territory or duration. The test of reasonableness is whether the restraint, considering the particular situation and circumstances, is such as to afford only a fair protection to the legitimate interests of the party in favor of whom it is given and not so extensive as to interfere with the interests of the public. The defendants argued, however, that this particular contract, relating to a hospital, a quasi-public institution, must be deemed invalid because prejudicial or specially injurious to the public interests. Contracts between professional men, such as physicians and surgeons, the court said, not to practice in competition with another pursuing the same calling have been frequently enforced in other jurisdictions where such contracts conformed to the rule of being only partial in their restraint, founded on a valuable consideration and reasonable in their operation, no distinction being made between such contracts and those of tradesmen. The court thought the doctrine had been too long and too firmly settled to be shaken now by holding that a private hospital is of such a public nature that a contract of its owners that they will not set up a competing hospital is against public policy. The restrictive covenant was held valid.

The defendants further argued, apparently, that their hospital was established and maintained not in Floyd County but in Knott County and hence did not constitute a violation of the restrictive agreement. It was manifest, the court said, that the location of the hospital in Knott County was chosen for the deliberate purpose of securing the industrial hospital business of Floyd County, and the evidence disclosed a very aggravated invasion of the territory which had been served by the older institution. Of the 1,008 patients that entered the new hospital up to the time that the defendant physician testified, 828 were from Floyd County. There was solicitation of business and inducement of cancelation of hospital contracts. Nurses and other employees were taken away from the Beaver Valley Hospital. It was true, the court pointed out, that the letter of the contract in respect of location of the hospital was strictly observed, but "as the meaning of the law-maker is the law, so the meaning of the contracting parties is the agreement. Words are merely the symbols they employ to manifest their purpose that it may be carried into execution. . . . The intent developed is alone material, and when that is ascertained it is conclusive." *Whitney* v. *Wyman*, 101 U. S. 392. Obviously, continued the court, geography was not important in this case. The important thing was the protection against an unjust competitive encroachment. Furthermore, the instrument assigning the rights of the defendants in the hospitalization contracts with the coal mining companies concluded: "To have and to hold all the benefits therefrom, with our good will and assistance." Good will has been defined as the probability that the old customers will resort to the old place. Unquestionably, this included not only the probabilities attaching to a location but those attaching to an established business wherever it may be situated. And the sale of good will, whether in express terms, as here, or implied from the sale of the business, carries with it certain implied obligations on the part of the seller. There is at least an implied promise that the seller will not solicit the trade of old customers nor do any act that will interfere with the vendees' use and enjoyment. It is the general rule of the courts in upholding covenants of this character not only to prohibit the covenantor, who establishes a place of competitive business in close proximity to the prescribed territory, from soliciting business there but to prohibit the doing of any business within the territory irrespective of whether it is obtained by solicitation. The action of the defendants in taking and accepting the business from Floyd County was, in the opinion of the court, clearly a violation of their contract.

The defendants further sought to justify their action on the ground that the plaintiffs had breached that part of the contract which gave the defendant physician the right to have his patients cared for at the Beaver Valley Hospital. With respect to this matter, the court said that there was a maze of contradictions. There was testimony which, if taken at its face value, tended to prove gross malpractice and mistreatment of the defendant physician's patients and unprofessional and unfair treatment of the physician personally. The court concluded, however, that the defendant physician did not prove that he acted in good faith. The court believed that he precipitated and was the primary cause of the trouble which resulted in what he later deemed to be the plaintiffs' breach of contract.

The defendants further questioned the validity of their assignment of the industrial hospitalization contracts to the "Beaver Valley Hospital, Inc." It is true, the court said, that the majority of the decisions are to the effect that a corporation may not engage in the practice of medicine or surgery through licensed employees. Certainly a corporation may not engage in the practice of medicine or surgery in the sense that an individual physician or surgeon practices. The court could see no reason, however, why a corporation may not conduct a hospital and have its officers and employees perform the usual services of a hospital. The contracts in question related to hospital services and not strictly to medical or surgical services. Furthermore, while the purchasers of the Beaver Valley Hospital contemplated forming a corporation, none was formed. The individual plaintiffs were the real parties in interest and the assignments were made for their benefit. To hold them illegal on this account, the court said, would be to drop the substance for the shadow.

Equally without merit, the court continued, was the argument that as these contracts called for the personal services of the defendant physician they were not assignable. There was no legal authority to sell or bind the patients. The purpose and effect was to transfer the rights of the hospital in the contracts under which the owners were receiving considerable compensation through the collective bargaining of the several groups of employees and their employers. If the patients were complaining, the court thought that other issues would be brought into the case. But any possible invalidity of the assignment of the contracts could not justify the covenantors in operating a hospital contrary to their voluntarily assumed obligations.

In the opinion of the Court of Appeals, therefore, the plaintiffs showed their right to relief. An injunction should be issued, the court said, enjoining the defendants from receiving for medical or surgical care or treatment any person who resides or lives in Floyd County in any hospital rendering the

same or similar services which they, directly or indirectly, own, lease or operate. The judgment of the trial court was therefore reversed with the direction to enter judgment consistent with the opinion of the Court of Appeals.—*Johnson et al. v. Stumbo et al. (Ky.), 126 S. W. (2d) 165.*

Malpractice: Degree of Care and Skill Required; Idiosyncrasy to Roentgen Rays.—The defendant had treated the plaintiff for an eruption on her shoulders, arms and body, using x-rays for that purpose. She claimed that through his negligence she had been injured. She brought suit, therefore, in the superior court, Fulton County, Ga. A verdict was returned in favor of the defendant and the plaintiff moved for a new trial. From a judgment overruling her motion she appealed to the court of appeals of Georgia, division No. 2.

The plaintiff contended that the trial court erred in defining the degree of care and skill required of the defendant as "such care and/or skill and/or diligence as, under the law or similar conditions and all the surrounding circumstances is ordinarily employed by the profession generally in this locality." This charge, said the court of appeals, was error. Whether the degree of care and skill exercised in any particular case was or was not that reasonable degree prescribed by the Georgia Code was a question of fact for the jury. The jury might, however, in finding an answer to that question, consider the degree of care and skill exercised by the profession generally in the locality or community. The plaintiff contended, too, that it was error to instruct the jury that the defendant was absolved from blame if he exercised either the care, or the skill, or the diligence ordinarily exercised by the profession, whereas the true rule was that a physician must possess and exercise a reasonable degree of both care and skill. The court of appeals pointed out that in charging the jury neither the conjunctive nor the disjunctive was used but the ambiguous term "and/or." That term was calculated, said the court, to lead the jury to believe that the defendant had discharged his duty if he used either a reasonable degree of care or a reasonable degree of skill, but that he need not use a reasonable degree of both. The charge given by the trial court was therefore error.

The plaintiff contended that the charge given by the trial court was erroneous, too, in that it purported to state the standards required of a physician or surgeon, whereas the defendant, since he was a specialist, should be held to the standards of care and skill required of specialists. The court of appeals, however, found no error in this charge. The defendant, although a specialist, was nevertheless a physician. The care and skill required of him, whether in treating a patient by medicine or by x-rays, were the care and skill ordinarily employed by physicians under similar conditions.

It was error, however, the court of appeals held, for the trial court to charge the jury that the plaintiff would not be entitled to damages if by her exercise of ordinary care she could have avoided the consequences of the defendant's negligence, if any; for there was no evidence to show that any act or omission of the plaintiff could be charged to her as negligence contributing to her injury or that in the exercise of ordinary care or skill she could have prevented such injury.

The defendant contended that the plaintiff's injury, if any, was due not to the defendant's negligence but to her idiosyncrasy to x-rays. The trial court instructed the jury to consider whether she had such an idiosyncrasy and, if so, (1) whether the idiosyncrasy caused the condition from which she claimed to have suffered and (2) whether the existence of the idiosyncrasy was known to the defendant or, in the exercise of ordinary care on his part, should have been known to him. The defendant denied such knowledge or that with ordinary care on his part he should have known of an idiosyncrasy, if any existed, but the burden of proof as to that was on the defendant, the trial court instructed the jury, since a party asserting a fact has the burden of proving his assertion. The instruction, the plaintiff complained, taken in connection with other parts of the trial court's charge, was confusing and misleading to the jury. The court of appeals, however, held it to be a correct statement of the law.

The trial court instructed the jury that if it found that the plaintiff was negligent it should consider whether her negligence was the proximate cause of the injury of which she complained; that is, whether such negligence produced the injury by a natural and continuous sequence, unbroken by any new, independent cause. This charge, the plaintiff contended, was not applicable in the case, because there was no evidence of any intervening cause, and it might lead the jury to conclude that her idiosyncrasy, if she had one, was such a new and independent cause as would destroy the legal implication of a causal relationship between the defendant's negligence and her injury. Her idiosyncrasy, if she had one, she contended, was a condition, not a cause. The court of appeals pointed out, however, that the three doses of x-rays administered by the defendant were not excessive or such as would produce injury in the absence of an idiosyncrasy and would justify the jury in finding that the plaintiff had such an idiosyncrasy as was described and that that idiosyncrasy was not only a condition of her injury but a cause of it.

The judgment of the trial court overruling the plaintiff's motion for a new trial was reversed.—*Kuttner v. Swanson (Ga.), 2 S. E. (2d) 230.*

Society Proceedings

COMING MEETINGS

Academy of Physical Medicine, Richmond, Va., Apr. 24-26. Dr. Herman A. Osgood, 144 Commonwealth Ave., Boston, Secretary.
Alabama, Medical Association of the State of, Birmingham, Apr. 16-18. Dr. D. L. Cannon, 519 Dexter Ave., Montgomery, Secretary.
American Association for the Study of Goiter, Rochester, Minn., Apr. 15-17. Dr. W. Blair Mosser, 133 Biddle St., Kane, Pa., Secretary.
American Association for the Study of Neoplastic Diseases, Louisville, Ky., Apr. 11-13. Dr. Eugene R. Whitmore, 2139 Wyoming Ave. N.W., Washington, D. C., Secretary.
American Association of the History of Medicine, Atlantic City, N. J., May 4-5. Dr. Henry E. Sigerist, 1900 East Monument St., Baltimore, Secretary.
American College of Physicians, Cleveland, Apr. 1-5. Mr. E. R. Loveland, 4200 Pine St., Philadelphia, Executive Secretary.
American Orthopedic Association, Kansas City, Mo., May 4-10. Dr. Ralph K. Ghormley, 110 Second Ave. S.W., Rochester, Minn. Secretary.
American Pediatric Society, Skytop, Pa., May 2-4. Dr. Hugh McCulloch, 325 North Euclid Ave., St. Louis, Secretary.
American Society of Biological Chemists, New Orleans, Apr. 13-17. Dr. C. G. King, Dept. of Chemistry, Univ. of Pittsburgh, Pittsburgh, Secretary.
American Surgical Association, St. Louis, May 1-3. Dr. Charles G. Mixter, 319 Longwood Ave., Boston, Secretary.
Arizona State Medical Association, Tucson, Apr. 18-20. Dr. Leslie R. Kober, 15 East Monroe St., Phoenix, Secretary.
Arkansas Medical Society, Fort Smith, Apr. 15-17. Dr. W. R. Brooksher, 602 Garrison Ave., Fort Smith, Secretary.
Association of American Physicians, Atlantic City, N. J., May 7-8. Dr. Hugh J. Morgan, Vanderbilt University Hospital, Nashville, Tenn., Secretary.
California Medical Association, Coronado, May 6-9. Dr. George H. Kress, 450 Sutter St., San Francisco, Secretary.
Florida Medical Association, Tampa, Apr. 29-May 1. Dr. Shaler Richardson, 111 West Adams St., Jacksonville, Secretary.
Georgia, Medical Association of, Savannah, Apr. 23-26. Dr. Edgar D. Shanks, 478 Peachtree St. N.E., Atlanta, Secretary.
Iowa State Medical Society, Des Moines, May 1-3. Dr. R. L. Parker, 3510 Sixth Ave., Des Moines, Secretary.
Kansas Medical Society, Wichita, May 15-16. Mr. Clarence G. Munns, 112 West Sixth St., Topeka, Executive Secretary.
Louisiana State Medical Society, New Orleans, Apr. 22-24. Dr. P. T. Talbot, 1430 Tulane Ave., New Orleans, Secretary.
Maryland, Medical and Chirurgical Faculty of, Baltimore, Apr. 23-24. Dr. Richard T. Shackelford, 1211 Cathedral St., Baltimore, Secretary.
Minnesota State Medical Association, Rochester, Apr. 22-24. Dr. B. B. Souster, 493 Lowry Medical Arts Building, St. Paul, Secretary.
Mississippi State Medical Association, Jackson, May 14-16. Dr. T. M. Dye, McWilliams Bldg., Clarksdale, Secretary.
Missouri State Medical Association, Joplin, Apr. 30-May 1. Mr. E. H. Bartelsmeyer, 634 North Grand Blvd., St. Louis, Executive Secretary.
Nebraska State Medical Association, Omaha, Apr. 22-25. Dr. R. B. Adams, 416 Federal Securities Building, Lincoln, Secretary.
New Hampshire Medical Society, Manchester, May 14-15. Dr. Carleton R. Metcalf, 5 South State St., Concord, Secretary.
New York, Medical Society of the State of, New York, May 6-9. Dr. Peter Irving, 2 East 103d St., New York, Secretary.
North Carolina, Medical Society of the State of, Pinehurst, May 13-15. Dr. T. W. M. Long, 321 Hamilton St., Roanoke Rapids, Secretary.
North Dakota State Medical Association, Minot, May 6-8. Dr. Albert W. Skelsey, 20½ North Broadway, Fargo, Secretary.
Northern Tri-State Medical Association, Battle Creek, Mich., Apr. 9. Dr. E. Benjamin Gillette, 320 Michigan St., Toledo, Ohio, Secretary.
Ohio State Medical Association, Cincinnati, May 14-16. Mr. C. S. Nelson, 79 East State St., Columbus, Executive Secretary.
Oklahoma State Medical Association, Tulsa, May 6-8. Dr. L. S. Willour, 210 Plaza Court Bldg., Oklahoma City, Secretary.
Pacific Coast Surgical Association, Portland, Ore., Apr. 3-6. Dr. H. Glenn Bell, University of California Hospital, San Francisco, Secretary.
Society for the Study of Asthma and Allied Conditions, Atlantic City, N. J., May 4. Dr. W. C. Spain, 116 East 53d St., New York, Secretary.
South Carolina Medical Association, Charleston, Apr. 30-May 2. Dr. E. A. Hines, Seneca, Secretary.
Tennessee State Medical Association, Chattanooga, Apr. 9-11. Dr. H. H. Shoulders, 706 Church St., Nashville, Secretary.
Texas, State Medical Association of, Dallas, May 13-16. Dr. Holman Taylor, 1404 West El Paso St., Fort Worth, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1930 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

Alabama State Medical Assn. Journal, Montgomery

9: 201-244 (Jan.) 1940

Dietary Management of Diabetes. E. G. Givhan Jr., Birmingham.—p. 201.
American Medicine. M. S. Davie, Dothan.—p. 204.
Carcinoma of Colon and Rectum. E. Drennen, Birmingham.—p. 209.
Sepsis: The Doctor's Number One Problem. F. L. Chenault, Decatur.—p. 213.
Pyelitis in Infancy. W. W. Harper, Selma.—p. 216.
A Plea for the Use of U. S. P., N. F. and N. N. R. Drugs. A. R. Bliss Jr., Birmingham.—p. 217.
Blood Transfusions: Indications, Preparation, Administration. T. J. Payne, Jasper.—p. 222.

American Journal of Hygiene, Baltimore

31: 1-44 Section A (Jan.) 1940. Partial Index
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Section A

*Study of Tuberculous Infection and Mortality in Children of Tuberculous Households. Miriam Brailey, Baltimore.—p. 1.

Section B

Epidemic of Hydrocephalus in Group of Experimental Rabbits. R. R. Hyde, Baltimore.—p. 1.
The Vi Agglutination Test as Aid in Detection of Chronic Typhoid Carriers. Calista P. Eliot, Baltimore.—p. 8.
Investigation of Preserving Solutions for Recovery of Dysentery Bacilli from Fecal Specimens. Edna Bangxang and Calista P. Eliot, Baltimore.—p. 16.
*Experiment in Immunization Against Influenza with Formaldehyde-Inactivated Virus. R. M. Taylor and M. Dreguss, Budapest, Hungary.—p. 31.
Antigenic Behavior of Certain Hungarian Strains of Epidemic Influenza Virus. R. M. Taylor, M. Dreguss and F. De Ritis, Budapest, Hungary.—p. 36.
Antigenic Differences in Viruses from Cases of Influenza and Colds. Jeannette Chapman and R. R. Hyde, Baltimore.—p. 46.

Section C

Further Observations on Experimental Malaria Infections in Anopheles Stephensi from Contrasting Larva Environments. P. F. Russell and B. N. Mohan, Guindy, Madras.—p. 19.

Section D

Schistosomiasis in Irrigated Mountain Valleys of Venezuela. J. A. Scott.—p. 1.
Failure of Artificial Immunization to Influence Hymenolepis Diminuta Infections in Rats. A. C. Chandler, Houston, Texas.—p. 17.

Tuberculous Infection and Mortality in Children.—From records of the childhood outpatient tuberculosis clinic at the Harriet Lane Home of Johns Hopkins Hospital, Brailey determined the prevalence of infection and the mortality risk to children of families containing an adult with pulmonary tuberculosis. The clinic admits only infants less than 2 years of age who are tuberculin positive or, if tuberculin negative, in household contact with an adult with pulmonary tuberculosis. The study deals only with individuals less than 15 years of age entering the household and followed only to 20 years of age. The number of families in the study was 285. The complete roster contained a number of children already dead from various causes at the time family investigation was initiated, but they are included, making a total of 1,383. Considering first the 782 children of households containing an open adult case of pulmonary tuberculosis, the smallest proportion of positive reactions (29 per cent) was encountered in children less than 1 year of age. In children aged 1 year, positive reactions were present in 64 per cent. The percentage of positive reactions was 71 for children up to 4 years of age, and for those from 5 to 9 it stands at 82; for the small group of children tested between 10 and 14 years of age it is 84. Omitting children less than 1 year of age, 77 per cent were positive to 1 mg. or less of tuberculin. For comparison, data for 107 children in familial contact with tuberculous adults whose sputum was repeatedly negative or unknown as to bacterial status show that 8 per cent of infants less than 1 year of age reacted positively, 35 per cent of those from 1 to 4 years, 54 per cent of those from 5 to 9 and 60 per cent of those from 10 to 14. When the duration of the preceding contact was taken into consideration, exposure being counted from the onset of symptoms in the adult, 37 per cent of the children exposed to a sputum-positive case for periods of less than a month reacted to tuberculin; likewise 60 per cent of those in contact from one to three months, 63 per cent of those exposed from three to six months, 76 per cent in contact from six to twelve months and 85 per cent of those subjected to more than one year of such contact, preceding their first test, were positive. In contrast, 21 per cent of the children associated only with supposedly sputum-negative disease reacted to tuberculin after exposures varying from one to twelve months. When such contact had been present longer than one year, 56 per cent of those tested reacted to tuberculin. When prevalence of infection in children of the 285 households was compared with a similar sample of Baltimore children, the risk of infection in children less than 5 years of age in families containing a sputum-positive case was eighteen times greater for white children and eight times greater for Negro children than in the corresponding control groups. When the families contained a case regarded as sputum negative, infection risk was increased six times for the white and three times for the Negro children. Age-specific mortality rates derived by a modified life-table method for the children of the study after exposure to adult familial pulmonary tuberculosis revealed that their probability of dying from some cause before the age of 20 was 18 per cent for white children and 35 per cent for Negro children; the probability of dying from tuberculosis during the same age period was respectively 8.4 and 25 per cent. The highest mortality and highest case fatality from tuberculosis before 20 years of age occurred in infants less than 1 year of age. At this age the Negro children showed a mortality from tuberculosis from four to five times greater than the white. The lowest level of mortality from tuberculosis was between the ages of 5 and 14. For ages 15 to 19 the risk rose sharply in both races: in the Negro child it approximated the rate observed for children aged from 1 to 4; in the white child a level somewhere between the rates observed for the first year of life and for children between 1 to 4 years of age was reached. Prior to known contact, the mortality from all causes of the white families of the study was significantly higher than that of the general white population of Baltimore, while the Negro families showed a somewhat lower mortality than that of the Negro population of the city. Subsequent to the establishment of known contact, both races showed a mortality from all causes significantly higher than that expected. For children from birth to 20 years of age, in white families, the risk of dying from tuberculosis after known familial contact was increased sixteen times; and for those in Negro families the risk was eight times greater. The smaller ratio in the Negro children is due to the greater number of expected deaths from tuberculosis in this race.

Experimental Immunization Against Influenza.—Taylor and Dreguss gave one injection of a formaldehyde-inactivated influenza virus (WS) to 306 persons and kept 336 unvaccinated to serve as controls. During a mild epidemic which occurred shortly thereafter symptoms of influenza developed in fourteen (4.6 per cent) of those vaccinated and in twenty (6 per cent) of the control subjects. The difference is obviously not significant. A virus of the human influenza type was isolated during an acute attack from three of the control and one of the vaccinated persons. Blood samples taken before and after the vaccination from twenty-two persons were tested against the virus used for the preparation of the vaccine. Three showed no increase of protective antibodies as a result of the vaccination, twelve showed a fivefold increase, four a twenty-five-fold increase and three a 125-fold increase. During the course of the epidemic five influenza virus strains were isolated. These strains differed in their antigenic qualities from the virus strain used in the vaccine. This circumstance may have played a part in the apparent ineffectiveness of the vaccine.

American J. Obstetrics and Gynecology, St. Louis

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Responses of Human Postpartum Uterus to Posterior Pituitary Extracts. S. Gardiner and J. T. Bradbury, Ann Arbor, Mich.—p. 1.
*Diagnostic Significance of Endometrial Glands in Early Pregnancy. S. H. Sturgis, Boston.—p. 10.
Specific "Toxemia," Essential Hypertension and Glomerulonephritis Associated with Pregnancy. I. Wellen, New York.—p. 16.
Congestive Heart Failure in Pregnancy. T. W. Oppel, New York.—p. 24.
Management of Placenta Praevia: Analysis of 260 Consecutive Cases. R. E. Arnell and W. F. Guerriero, New Orleans.—p. 32.
*Palliative Treatment of Dysmenorrhea with Acetylsalicylic Acid, Phenacetin and Propadrine Hydrochloride. G. W. Ainlay, Fairbury, Neb.—p. 82.
Blood Studies During Pregnancy and Puerperium. J. S. Labate, New York.—p. 87.
Pathologic and Clinical Aspects of Adenomyosis and Endometriosis: Survey of 224 Cases. M. L. Dreyfuss, New York.—p. 95.
*Attempt to Control Fetal Weight: Preliminary Report. L. E. Arnold, Dallas, Texas.—p. 99.
Treatment of Metromenorrhagia with Testosterone Propionate: Preliminary Report. W. C. Sturgis, Baltimore; A. R. Abarbanel, New York, and D. S. Nader, Bogota, Colombia, South America.—p. 102.
Inhibition of Lactation During Puerperium by Testosterone Propionate. C. H. Birnberg, L. Kurzrok and S. J. Klor, Brooklyn.—p. 107.
Use of Testosterone Propionate in Inhibition of Lactation During Puerperium. S. L. Siegler and L. M. Silverstein, Brooklyn.—p. 109.
Clinical Experiences with Stilbestrol (Diethylstilbestrol). C. G. Collins, J. C. Weed, B. B. Weinstein and F. R. Lock, New Orleans.—p. 117.
Mono-Amniotic Twin Pregnancy with Living Infants. J. Parks and J. R. Epstein, Washington, D. C.—p. 140.

Endometrial Glands in Early Pregnancy.—The diagnosis of pregnancy from curettage material has generally rested on the presence of decidua vera or chorionic villi in the specimen removed. Sturgis calls attention to the importance of recognizing a characteristic pattern of increased glandular activity in the endometrium. He has found this picture consistently and early in the eleven cases that he reports. Although the group is small it suggests that the unusual secretory activity may occasionally prove to be a reliable aid in the diagnosis of gestation. This sign may be the only diagnostic sign present. When biopsies were taken on seven of the patients within six weeks from the last menstruation, neither the patient nor the doctor suspected pregnancy. In three of these seven specimens no decidua or villi were seen and the only indication of conception was found in the glands. In these three cases then the diagnosis of pregnancy would have been missed if the unusual secretory endometrial activity had not been recognized. In ten of these eleven cases an early pregnancy was confirmed by subsequent events. A subsequent miscarriage was probable in the remaining case. The tissue generally removed does not average more than 5 cu. mm. The eleven cases demonstrate that not infrequently such small pieces may be removed in early pregnancy without finding either decidual tissue or villi on microscopic study. It may be that the site of the biopsy was at a distance from implantation and that, in some of the early cases, the decidual response had not yet involved all of the functional endometrium. In any case, all eleven biopsies contained an adequate number of glands in the spongy layer showing unusual secretion to suggest a diagnosis of pregnancy. Under low power these glands are saw toothed when cut longitudinally and star shaped with many invaginations when cut across. In the spongy layer they lie crowded close together in early gestation and their general configuration is similar to that seen during the active luteal phase of the menstrual cycle. Under high power the epithelial cells lining the glands are swollen, larger and higher columnar in type than at any time in the normal menstrual cycle. This forces them to bulge into the lumen like an exaggerated goblet cell. They are filled with coarse, deep-staining granules, except at the luminal margin, where these granules are absent and a fine reticular network is seen. Their free edge, ballooning out into the lumen, usually shows a clearcut, sharp and distinct cell membrane. The nuclei are round, light staining and near the basement membrane. There are no epithelial mitoses.

Palliative Treatment of Dysmenorrhea.—Ainlay used a combination of three drugs for the palliative treatment of thirty-four cases of primary and four cases of organic or secondary dysmenorrhea. The ages of the patients ranged from 14 to 44 years. The combination treatment consisted of 5 grains (0.3 Gm.) of acetylsalicylic acid, 3 grains (0.2 Gm.) of acetophenetidin and three-fourths grain (0.05 Gm.) of propadrine hydrochloride. The value of acetylsalicylic acid as an analgesic with little depression is well known. It is, however, ineffective for severe pain, and especially cramplike pain. Acetophenetidin, while probably possessing more analgesic properties, is apparently much more depressing in its action and seems to be especially so during menstruation. Like acetylsalicylic acid it is not capable of relieving cramplike pains. Propadrine hydrochloride increases the effectiveness of the other two ingredients but counteracts any tendency to depression afterward. It is believed but not proved entirely that propadrine hydrochloride is a marked antispasmodic and decongestant without side effects and with no possible chance for anuria or nausea. The patients were given three capsules of the combined drugs daily at the first onset of distress. This medication was continued until the third day of the period. Pain after the third day is not relieved well by the preparation and should lead one to suspect some organic lesion. The capsules were given the first month, skipped the second month and repeated the third month in an attempt to cover the variation that may be expected in some women. The results showed that the combination of the three drugs is more effective in the primary type of dysmenorrhea and also if taken immediately on the appearance of symptoms. There is a marked effect within a few minutes after taking the capsule. All patients were either partially or completely relieved. The relief from physical and mental depression is often more gratifying to the patient than the relief from pain. The treatment does not depress the kidneys, nor does it influence the regularity or the amount of the menstrual flow.

Attempt to Control Fetal Weight.—Arnold points out that, excluding prematurity, most neonatal deaths are of babies having a birth weight in excess of 8 pounds (3,636 Gm.). As the fetal birth weight curve rises above 8 pounds both the fetal mortality and maternal morbidity curves also rise. Maternal weight can usually be controlled by dietary restrictions; however these restrictions have no effect on fetal weight. Realizing that maternal dietary excesses do not cause fetal obesity, the most reasonable etiologic factor that presents itself is a disturbance in thyroid metabolism. Williams states that hypertrophy of the thyroid can be recognized clinically in from 65 to 90 per cent of all pregnant women. Before an organ undergoes hypertrophy there must first be an increased demand placed on that organ. If the organ is unable to meet this demand by hypertrophy and hyperplasia, a state of deficiency or decompensation develops. With this evidence as a foundation, the author gave 116 women thyroid extract orally during four or more months of pregnancy. Each patient received not less than 3 grains (0.2 Gm.) and not more than 6 grains (0.4 Gm.) daily. These patients received no other medication that could influence weight and they were told to eat a normal, well balanced diet. They were given no extradietary calcium or vitamins. The average maternal weight gain of these 116 women during the entire pregnancy was 18⅕ pounds (8.3 Kg.). The average fetal birth weight was 6⅘ pounds (3,090 Gm.). There was no fetal mortality or prematurity and no maternal mortality. The most gratifying point in the series is the fact that no baby weighed more than 7 pounds 12 ounces (3,522 Gm.) and none less than 5 pounds 11 ounces (2,590 Gm.). The mothers demonstrated no signs of hyperthyroidism, preeclampsia or eclampsia. It has been suggested that thyroid deficiency might play some part in the etiology of the toxemias of pregnancy.

American Journal of Ophthalmology, St. Louis

23: 1-126 (Jan.) 1940

Pathology and Pathogenesis of Syphilitic Primary Optic Atrophy: Critical Review. J. E. Moore and A. C. Woods, Baltimore.—p. 1.
Grenz Ray Treatment of Experimental Infection of Cornea. E. Gallardo, R. Pfeiffer and R. Thompson, New York.—p. 41.
Evisceration of Globe with Scleral Implant and Preservation of Cornea. F. E. Burch, St. Paul.—p. 47.
Retinal Detachment Occurring in Primary Compensated Glaucoma: Report of Three Cases. H. S. Gradle and D. Snydacker, Chicago.—p. 52.
Cosmetic Correction of Facial Asymmetry with Prisms. J. P. Cowen, Chicago.—p. 60.
Studies on Infectivity of Trachoma: IX. Immunologic Aspects of Rickettsial Concept. L. A. Julianelle and J. E. Smith, Rolla, Mo.—p. 62.
Functional Training, an Aid in Surgical Correction of Strabismus. O. B. Nugent, Chicago.—p. 68.
Malignant Melanoma of Choroid and von Recklinghausen's Disease. S. Gartner, New York.—p. 73.

American Journal of Physiology, Baltimore

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Studies on Water Balance in Alarm Reaction. J. Howlett and J. S. L. Browne, Montreal.—p. 225.
*Direct Arterial and Venous Pressure Measurements in Man as Affected by Anesthesia, Operation and Shock. P. P. Volpitto, R. A. Woodbury and W. F. Hamilton, Augusta, Ga.—p. 238.
Relationships of Tissue (Subcutaneous and Intramuscular) and Venous Pressures to Syncope Induced in Man by Gravity. H. S. Mayerson and G. E. Burch, New Orleans.—p. 258.
Attempt to Detect Reflex Changes in Bronchial Caliber Synchronous with Respiration. H. C. Nicholson and R. H. Trimby, Ann Arbor, Mich.—p. 276.
Calorigenic Action of Adrenalin: Proportionality with Dose. F. R. Griffith Jr., F. E. Emery and Julia E. Lockwood, Buffalo.—p. 281.
Sucrose Taste Thresholds of Rats and Humans. C. P. Richter and Kathryne H. Campbell, Baltimore.—p. 291.
Effect of Acid Stimulation of Duodenum on Experimental Hyperglycemia and Utilization of Glucose. E. R. Loew, J. S. Gray and A. C. Ivy, Chicago.—p. 298.
Error of Estimate of Blood Cell Count as Made with Hemocytometer. J. Berkson, T. B. Magath and Margaret Hurn, Rochester, Minn.—p. 309.
Effect of Exercise on Blood Flow in Superior Mesenteric, Renal and Common Iliac Arteries. J. F. Herrick, J. H. Grindlay, E. J. Baldes and F. C. Mann, Rochester, Minn.—p. 338.
Effect of Warm and of Cold Nasopharyngeal Irrigation on Cervical Lymph Flow. Jane D. McCarrell, Boston.—p. 349.
Diameter of Red Blood Cells in Healthy Young Women. Eva G. Donelson, Jane M. Leichsenring and Lucille M. Wall, St. Paul.—p. 382.
Mechanism of Inhibiting Effect of Electrolytes and Heparin on Blood Coagulation. A. J. Glazko and D. M. Greenberg, Berkeley, Calif.—p. 399.
Respiration of Human Spermatozoa and Their Response to Various Gases and Low Temperatures. L. B. Shettles, Baltimore.—p. 408.

Direct Arterial and Venous Pressure.—Volpitto and his colleagues studied the blood pressure changes of twenty patients during surgical procedures performed under inhalation anesthesia and obtained nearly continuous tracings of the arterial blood pressure throughout each surgical procedure, lasting several hours in some instances. The tentative notions developed from their study are that: 1. Both venous and arterial contours show striking changes during surgical operation and anesthesia. 2. These changes are of two types: those presented by cases of hemorrhage or secondary traumatic shock with rapid pulse of the "empty" type, and those presented by shock of neurogenic origin with the equally low pressures, slow heart and pulse contours of an entirely different shape.

Archives of Dermatology and Syphilology, Chicago

41: 193-450 (Feb.) 1940

Cutaneous Carbohydrates: I. Normal Skin. T. Cornbleet, Chicago.—p. 193.
The "Common Mole": Its Clinicopathologic Relations and Question of Malignant Degeneration. E. F. Traub and H. Keil, New York.—p. 214.
Malassezia Furfur, the Cause of Tinea Versicolor: Cultivation of Organism and Experimental Production of the Disease. M. Moore, St. Louis.—p. 253.
Search for Filtrable Viruses in Cutaneous Diseases of Unknown Etiology. F. S. Markham, St. Louis.—p. 261.
*Pityriasis Rosea: Review of Literature and Report of 219 Cases, in Thirty-Eight of Which Convalescent Serum Was Used. H. D. Niles and Margaret M. Klumpp, New York.—p. 265.
Lesions of Oral Cavity Caused by Physical and by Physicochemical Factors. E. S. Lain, Oklahoma City.—p. 295.
Action of Sulfur-Containing Compounds in Arsenical and Mercurial Poisoning: Review of Use of Sodium Thiosulfate in Dermatologic Practice and Report of Experiments on Rabbits with Sodium Thiosulfate, Sodium P-Sulfhydril Phenyl Sulfonate and Sodium Formaldehyde Sulfoxylate. Kathleen B. Muir, Evangeline Stenhouse and S. W. Becker, Chicago.—p. 308.
*Prevention of Industrial Dermatitis, with Reference to Protective Hand Creams, Soap and the Harmful Role of Some Cleansing Agents. J. V. Klauder, E. R. Gross and H. Brown, Philadelphia.—p. 331.
Pemphigus: Experimental Studies on Thirty-Four Patients. J. H. Talbott and F. S. Coombs, Boston.—p. 359.
Treatment of Ringworm of Scalp with Gentian Violet. W. F. Spiller, W. B. Sharp and M. B. John, Galveston, Texas.—p. 370.

Pityriasis Rosea.—Niles and Klumpp report their own observations on 219 cases. Among the many aspects discussed are the incidence in comparison with cutaneous disorders in general; the age, sex and race of patients; the duration, seasonal incidence, systemic symptoms and familial occurrence of pityriasis rosea, its possible etiology and the different types and locations of its lesions. Regarding the incidence of the herald plaque the reports of authors vary; Niles and Klumpp observed it in more than 50 per cent of 174 cases. In a review of literature the authors found no mention of the therapeutic use of immune serum in pityriasis rosea. The rarity of recurrence of pityriasis rosea suggested to them that the serum of patients who had had this disease might possess immune properties. They followed the results of treatment of 114 of 219 patients. The patients were divided into three groups. Fifty patients were given from one to eight treatments with ultraviolet rays from a quartz mercury vapor glow lamp at intervals of from one to three times a week. For the first treatment the patients were given a dose which would produce a mild erythema. From the effect of this treatment the erythema dose for each person was determined and was given thereafter. Most of the exposures were followed by desquamation, which frequently caused the itching to become worse because of the associated dryness. The ultraviolet irradiation did not shorten the total duration; however, it had an immediate beneficial effect, as after even one or two treatments the patches became much drier and paler and seemed to peel off. Thirty-eight patients received serum. Blood was obtained from patients on the day on which they were discharged as cured. The clot was allowed to retract and the serum was drawn off and placed in the ice box until needed. In every case a Wassermann test was performed at the time the blood was drawn. When the supply permitted, 5 cc. was injected intramuscularly once, and occasionally twice, a week. Only one patient was given more than three injections. The patients who received serum soon became more comfortable; many stated that the itching ceased shortly after one injection. The twenty-six patients in the control group received only mild antipruritic topical remedies. The duration of the eruption, both from the onset to the cure and from the first treatment to the cure, was slightly shorter in the group treated with serum. The authors believe it is unjustifiable to conclude that the serum has no value until it has been used in a greater number of cases, in larger doses, at shorter intervals and in subcutaneous and intracutaneous injections.

Industrial Dermatitis.—Klauder and his collaborators maintain that trade dermatitis is caused annually in an enormous number of cases not by the substances encountered at work but by the removal of these substances with methods harmful to the skin. The authors questioned patients and persons employed in industry concerning the manner in which they washed their hands: the kind of soap used, the frequency of washing and the use of other cleansing agents, emollients and protective medicinal applications. They made surveys of factories and workshops in different industries to observe facilities provided for washing and measures employed in the prevention of industrial dermatitis. The studies emphasize the importance of mechanical devices in the prevention of industrial dermatitis and the need of education of workmen and others concerned in preventive measures, especially care of the skin and harmless methods of cleansing it. The authors discuss protective medicinal applications for the skin (protective hand creams). They give eight formulas of protective medicinal applications, comprising greasy and nongreasy preparations and those that dry leaving a film. Other protective applications (applied before working) are discussed: (1) hydrous wool fat for protecting from the carcinogenic action of mineral oils and tars, (2) different applications to prevent dermatoses from petroleum and lubricating oils, (3) bland oils to facilitate removal of paint, ink and dirt and (4) sodium bisulfite as a neutralizing and reducing agent. In the discussion of methods of cleansing the skin it is stressed that a 10 to 30 per cent solution of sodium thiosulfate and a 0.5 per cent solution of sodium metasilicate are harmless agents for removing such substances as paint, ink and dye. A formula consisting of a mixture of sulfonated neat's foot oil, liquid petrolatum and corn meal is given as a substitute for mechanic abrasive soap. In the discussion of the action of soap on the skin the authors take up mechanic soap and its ingredients, toilet soap, neutral soap, soaps for household and laundry purposes, soap fillers, silicates of sodium, the allergenic action of soap and soap as a primary cutaneous irritant. Soap is not sufficiently soluble, as employed for toilet or laundry purposes, to permit the alkaline salts it contains, especially sodium carbonate, in sufficient concentration in soap solution to act as cutaneous irritants. Exceptions are soaps in powder form mixed with sodium carbonate. The authors also evaluate detergents other than soap: triethanolamine soap, naphthenic acid soap and sulfonated oils. Formulas of different

combinations of sulfonated olive oil, sulfonated neat's foot oil, gelatin and liquid petrolatum and one containing sodium lauryl sulfate are proposed as soap substitutes. Sulfonated esters, sulfonated ethers and sulfonated alcohols have extensive use in industry, but there are few data available as to their use as detergents for human skin. The detergent property of vegetable meals is not sufficiently appreciated. They mention oat meal flour, almond meal (sweet almond) and powdered bitter almond, powdered soap tree bark (quillaja), powdered orris root and to a lesser degree flaxseed meal. When these substances are used with water to cleanse the hands the result is relatively satisfactory.

Archives of Neurology and Psychiatry, Chicago

43: 195-428 (Feb.) 1940

Experimental Disseminated Encephalopathy in the Monkey. A. Ferraro and G. A. Jervis, New York.—p. 195.
Pick's Disease with Atrophy of Temporal Lobes: Clinicopathologic Study. N. Malamud and D. A. Boyd Jr., Ann Arbor, Mich.—p. 210.
*Variations in Carbon Dioxide Content of Blood in Epilepsy. E. L. Gibbs, W. G. Lennox and F. A. Gibbs, Boston.—p. 223.
Epileptogenic Lesions of Brain: Histologic Study. W. Penfield and S. Humphreys, Montreal.—p. 240.
Adjustment of Acid-Base Balance of Patients with Petit Mal Epilepsy to Overventilation. L. F. Nims, New Haven, Conn.; E. L. Gibbs, W. G. Lennox, F. A. Gibbs, Boston, and D. Williams, London, England.—p. 262.
Physiology of Concussion. W. W. Scott, Chicago.—p. 270.
Spinothalamic Tract in Man. A. E. Walker, Chicago.—p. 284.
*Remissions in Epileptic Patients Treated with Sodium Bromide in an Outpatient Clinic. T. T. Stone and A. J. Arieff, Chicago.—p. 299.
Flaccid Hemiplegia in Man. C. D. Aring, Cincinnati.—p. 302.
Evaluation of Metrazol Shock in Treatment of Schizophrenia: Report of Results in 100 Cases. L. Reznikoff, Secaucus, N. J.—p. 318.
Production and Localization of Headache with Subarachnoid and Ventricular Air. T. J. C. Von Storch, L. Secunda and C. M. Krinsky, Boston.—p. 326.
Effects of Ethyl Alcohol on Cerebral Cortex and Hypothalamus of Cat. J. H. Masserman and L. Jacobson, Chicago.—p. 334.
Changes in Electro-Encephalogram During Metrazol Therapy. P. A. Davis, Boston, and W. Sulzbach, Waverley, Mass.—p. 341.
*Possible Etiologic Role of Arsenic in Disturbances of Central Nervous System Attributed to Avitaminosis, with Special Reference to Pellagra: Report of Case with Autopsy. M. Scott and E. E. Aegerter, Philadelphia.—p. 356.
Syphilitic Cerebral Hypertrophic Pachymeningitis: Clinicopathologic Studies in Case. G. B. Hassin and H. Zeitlin, Chicago.—p. 362.
Folie à Deux: Report of Case of Remission from a Psychosis of More Than Twenty-Five Years' Duration. Beatrice Postle, Columbus, Ohio.—p. 372.

Carbon Dioxide Content of Blood in Epilepsy.—Gibbs and his associates determined the concentration of carbon dioxide, oxygen, sodium and potassium in the arterial and the internal jugular venous blood of patients with epilepsy. These studies were performed between seizures and the relation between clinical and subclinical seizures was observed. Whereas the concentrations of oxygen, sodium and potassium were normal in epileptic persons, the values for carbon dioxide in both the arterial and the internal jugular blood were abnormal in the following respects: 1. The carbon dioxide content of arterial and internal jugular blood drawn without relation to seizures was abnormal (lower or higher than normal) in 70 per cent of ninety-four patients. 2. In patients subject to petit mal seizures, carbon dioxide values tended to be abnormally low, whereas in those subject to grand mal seizures they tended to be abnormally high. 3. Spontaneously occurring grand mal and petit mal seizures were preceded by abnormal fluctuations in the carbon dioxide content of arterial and internal jugular blood, the time relations being such as to indicate a causal linkage between the carbon dioxide content of the blood and the seizures. These observations are consistent with electro-encephalographic evidence that the type of cerebral dysrhythmia present in grand mal seizures is in contrast to that in petit mal attacks and that carbon dioxide has a pronounced influence on cortical rhythms. All the available evidence indicates that carbon dioxide plays a significant part in the causation of epilepsy.

Sodium Bromide for Remissions in Epileptic Patients.—Stone and Arieff obtained complete cessation of attacks in forty-seven of ninety-eight epileptic patients during treatment with sodium bromide. These patients were seen at regular intervals for at least six months. Forty-seven of the patients suffered from grand mal and fifty from both grand and petit mal attacks and one from petit mal attacks. The disease was classified as idiopathic in sixty-nine, as organic in nineteen and as focal in ten. Thirty-eight of the patients were free from attacks from the beginning of treatment. Three of these patients were treated less than a year. Sixteen had had a remission of from six to twelve months, twelve from one to two years, seven from two to three years, two from three to four years and one for eight years. In nine other cases, attacks returned and then a terminal remission occurred. In six of these cases the duration of remission was from six to twelve months, in two from one to two years and in one for three years. Thirty-three additional patients had remissions but these were followed by exacerbations. Some of the remissions lasted for from months to years. In some cases the exacerbation occurred because the patient discontinued medication without permission. The presence of a single attack constituted an exacerbation. The remaining eighteen patients were recalcitrant to all forms of therapy in that a remission did not follow, although the number of attacks was diminished. The percentages of terminal remissions in cases of the idiopathic, focal and organic type of epilepsy were 49, 40 and 45 respectively. Remissions appeared to be more readily obtained in cases of grand mal attacks. There was no correlation between the age at which the convulsive state ensued, the duration of the disease, the number of previous attacks and the prognosis. Twenty-five of the patients were given phenobarbital in conjunction with sodium bromide but in only one of them did it appear of assistance in causing the remission. It seems that, when sodium bromide is ineffective in producing a remission, phenobarbital is also without effect.

Arsenic, Disturbances of Central Nervous System and Pellagra.—Scott and Aegerter report a case in which the condition from microscopic and clinical studies could be diagnosed as either pellagra or vitamin B deficiency. An abnormal amount of arsenic was found in the urine. This suggests to them that before a diagnosis of vitamin B deficiency or of arsenic poisoning is made both factors must be considered. Experiments are now in progress to investigate whether chronic ingestion of inorganic arsenic may be concerned in the etiology (primary or secondary) of pellagra and other vitamin deficiencies.

Arkansas Medical Society Journal, Fort Smith

36: 197-220 (Feb.) 1940

Importance of Differential Diagnosis of Lesions in Anus, Rectum and Lower Sigmoid Colon. R. E. Crigler, Fort Smith.—p. 197.
Some Problems in Rectal Diagnosis. H. E. Murry, Texarkana.—p. 200.
Adenoma of Rectosigmoid and Its Relationship to Carcinoma of Rectum. H. G. Hummel, Little Rock.—p. 203.

Bulletin New York Academy of Medicine, New York

16: 51-126 (Feb.) 1940

Treatment of Gonadal Hypofunction. E. L. Sevringhaus, Madison, Wis.—p. 53.
Puberty, Menstruation, Pregnancy. R. T. Frank, New York.—p. 83.
Physiology and Psychology of Convalescence. O. H. P. Pepper, Philadelphia.—p. 98.
Convalescence of Old-Age Patients. L. F. Barker, Baltimore.—p. 105.

Canadian Public Health Journal, Toronto

31: 1-50 (Jan.) 1940

Some Observations on Control of Communicable Diseases. N. E. McKinnon, Toronto.—p. 1.
Elimination of Smallpox in Montreal by Vaccination. A. Groulx, Montreal.—p. 6.
Application of Phage Typing to Strains of Bacillus Typhosus Recovered from Typhoid Fever. K. F. Brandon, Hartford, Conn.—p. 10.
*Low Mortality Rate from Tuberculosis in the Jewish Race. E. Gagnon, Montreal.—p. 13.

Low Mortality Rate from Tuberculosis in Jewish Race.—Gagnon states that since 1911 the health department of Montreal has classified the deaths according to the racial origin of the population. This classification has shown a decidedly lower mortality rate in the Jewish race not only from all diseases but also from tuberculosis. During the last twenty years the average mortality rate from tuberculosis among the Jews has been only 40 per cent of the rate for the entire population. If comparison had been made between the rate for the Jewish population and the rate for the rest of the population, the difference would be even more accentuated. The author believes that the following factors may account for at least a part of the wide difference: 1. The last census showed that 60 per cent of the Jewish population of Montreal is foreign born. These immigrants were medically examined before entering the country and they constitute a select group as far as health is concerned.

2. The Jewish group of the population has limited social relations with other groups. 3. The Jewish community is the ethnical group provided with the best means of protection against tuberculosis. Their number represents only about 6 per cent of the total population but their subscription for public charities exceeds 18 per cent of the total. Therefore destitute Jews are better provided for than any of the other groups of the population. 4. Occupation plays an important part in the spread of tuberculosis. Only a small proportion of the Jewish population is occupied in heavy outside work and therefore affected by extreme variations in temperature. 5. The Jew sacrifices luxuries for the necessities of life, allows himself a wholesome and varied diet, does not abuse alcoholic beverages, is inclined to take care of his health and seeks early treatment for ailments.

Florida Medical Association Journal, Jacksonville

26: 317-372 (Jan.) 1940

Gastric and Duodenal Surgery. R. A. Gowdy, Miami Beach.—p. 331.
Importance of Case Records Relative to Cancer Problem. R. L. Elliston, Fort Lauderdale.—p. 336.
Water and Salt Metabolism. K. Hanson, Jacksonville.—p. 341.
Injuries At or Near the Wrist. J. A. Simmons, Arcadia.—p. 345.
Cooperative Management of Allergic Rhinitis. A. R. Hollender, Miami Beach.—p. 347.

Georgia Medical Association Journal, Atlanta

29: 1-48 (Jan.) 1940

Treatment of Sterility. C. B. Upshaw, Atlanta.—p. 1.
Rupture of Spleen: Report of Case. H. L. Cheves, Union Point.—p. 6.
Use of Sulfanilamide and Sulfapyridine in Pediatric Practice. J. Yampolsky, Atlanta.—p. 9.
Dr. Crawford W. Long. C. C. Harrold, Macon.—p. 23.
What Constitutes Adequate Treatment of Syphilis? S. J. Sinkoe, Atlanta.—p. 28.

Indiana State Medical Assn. Journal, Indianapolis

33: 55-116 (Feb.) 1940

Postoperative Pulmonary Complications and Carbon Dioxide Inhalation Therapy. F. W. Clement, Toledo, Ohio.—p. 55.
Cause, Prevention and Treatment of Atelectasis. E. G. Galbraith, Toledo, Ohio.—p. 57.
Oral and Plastic Surgery. J. E. Schaefer, Chicago.—p. 60.
Heart Neuroses, Their Diagnosis and Treatment. R. G. Moore, Vincennes.—p. 66.
Surgical Importance of Renal Anomalies. M. G. Schulhof, Muncie.—p. 69.
Tularemia: Report of Two Cases. A. Henderson, Ridgeville.—p. 73.
Eccyesis or Ectopic Pregnancy. F. H. Green Jr., Rushville.—p. 74.

Journal of Aviation Medicine, St. Paul

10: 159-246 (Dec.) 1939

Analysis of Physiologic and Psychologic Characteristics of 200 Civil Air Line Pilots. R. A. McFarland, A. Graybiel, Boston; E. Liljencrantz, San Francisco, and A. D. Tuttle, Chicago.—p. 160.
*Toxicity of Carbon Monoxide at High Altitudes. J. W. Heim, Dayton, Ohio.—p. 211.
Psychology and Aviation. W. A. Carlson, Randolph Field, Texas.—p. 216.

Toxicity of Carbon Monoxide at High Altitudes.—Heim studied the toxicity of carbon monoxide at reduced barometric pressures. The deleterious effects of carbon monoxide on the human organism are due to its combining with hemoglobin to the exclusion of oxygen, thus reducing the uptake of this gas by the blood, and because it hinders the use of the oxygen which does succeed in getting into the blood by interfering with its liberation from oxyhemoglobin. Both phenomena act additively to produce oxygen lack in the tissues. In the study of the toxicity of carbon monoxide the magnitude of each of the two actions must be evaluated. The effects can be predicted through theoretical calculations based on physicochemical laws governing the combination of carbon monoxide and oxygen with hemoglobin, which have been formulated by Haldane and his associates. Studies show that a concentration of 0.01 per cent of carbon monoxide in the air at 10,000 feet reduces the oxygen-carrying capacity of the hemoglobin by 10.5 per cent, thereby bringing the blood into a state of anoxemia. It is thus apparent that a concentration of carbon monoxide which is innocuous at sea level becomes dangerous at 10,000 feet. The action of carbon monoxide in reducing the arterial oxygen saturation is only part of the deleterious action of this gas on the organism. The second effect, that of hindering the dissociation of oxyhemoglobin in the tissues, may equal or even exceed the former in producing symptoms of anoxemia. The action in this case is caused by an alteration in the shape of the oxygen dissociation curve. The combined effect of these two factors will be to reduce still further the altitude tolerance. Therefore it is imperative that not a trace of carbon monoxide should be permitted to exist in airplane compartments at even moderate altitudes.

Journal of Infectious Diseases, Chicago

66: 1-96 (Jan.-Feb.) 1940

Normal Fecal Flora of Infants Between Two Weeks and One Year of Age: I. Serial Studies. M. L. Snyder, Denver.—p. 1.
Preparation of Brucella Abortus Plate Antigen and Some Factors Affecting Sensitivity of Antigen. M. H. Roepke and C. P. Fitch, St. Paul.—p. 17.
Analysis of Tubercle Bacillus and Its Natural Products by Immune, Allergic and Anaphylactic Tests. H. J. Corper, Denver.—p. 23.
Studies on Herpes Simplex Encephalitis in Rabbits: I. Therapeutic Effect of Vitamin C, Sulfanilamide and Pitressin. J. Flexner, M. Chassin and I. S. Wright, New York.—p. 30.
Study of Serologic Principle for Separation of Mixtures of Bacterial Species, with Preliminary Application to Isolation of Typhoid Bacilli from Feces. J. H. Hanks, R. B. Houlihan and L. W. Parr, Washington, D. C.—p. 33.
Local Formation of Antivaccinial Antibodies by the Skin. G. Hartley Jr., Chicago.—p. 44.
Studies on Infectivity of Vaccinal Elementary Bodies. D. H. Sprunt, W. Marx and J. W. Beard, Durham, N. C.—p. 53.
Dissociation in Candida Albicans. J. E. Mackinnon, Montevideo, Uruguay.—p. 59.
Effect of Indole 3 Acetic Acid on Multiplication of Escherichia Coli and Eberthella Typhosa. T. D. Beckwith and E. M. Geary, Los Angeles.—p. 78.
Studies on Streptococci of Bovine Mastitis. L. W. Slanetz and J. Naghski.—p. 80.
Isolation of Brucella from Lymph Nodes. Mary A. Poston and P. B. Parsons, Durham, N. C.—p. 86.
Studies on Listerella: I. Listerella Strain Isolated from a Premature Bovine Fetus. R. Graham, H. R. Hester and N. D. Levine, Chicago.—p. 91.

Journal of Lab. and Clinical Medicine, St. Louis

25: 333-444 (Jan.) 1940. Partial Index

*Effect of Alkalosis on Blood Picture in Chronic Splenomyelogenous Leukemia. R. D. Barnard and P. W. Ross, Chicago.—p. 345.
Observations on Reducing Substances in Blood Plasma of Rheumatisants. R. Dandurand, Montreal, C. W. Scull and R. Pemberton, Philadelphia.—p. 348.
*Sputum Studies in Pneumonia: Effect of Sulfanilamide. A. W. Frisch, Detroit.—p. 361.
Treatment of Benign Prostatic Hypertrophy with Testosterone Propionate. A. Trasoff, Philadelphia.—p. 377.
Comparative Iodine Content of Blood and Cerebrospinal Fluid. K. P. Klassen, Ruth L. Bierbaum and G. M. Curtis, Columbus, Ohio.—p. 383.
Intubation Studies of Human Small Intestine: XVI. Bacterial Flora of Ileum Compared with That of Throat and Stomach in Normal Subjects. Anna C. Nichols and P. M. Glenn, Philadelphia.—p. 388.
Determination of Acetylsulfapyridine: I. J. V. Scudi and H. J. Robinson, Rahway, N. J.—p. 404.
Id.: II. J. V. Scudi and H. J. Robinson, Rahway, N. J.—p. 409.
Use of Honey as Levulose Tolerance Test. J. B. Greco, Minas Gerais, Brazil, South America.—p. 420.

Alkalosis and Leukemia.—Barnard and Ross observed the blood pictures of two male patients with chronic splenomyelogenous leukemia during the administration of large doses of sodium bicarbonate. That an alkalosis was actually induced in these cases was based on the appearance of bradypnea, prostration and generalized anasarca during the administration of the alkali and its subsidence on the cessation of alkali administration. The authors believe that the clinical picture of alkalosis is a much better criterion for the development of this state than the determination of blood p_H. The induced alkalosis did not stimulate myeloblastic activity as determined from a study of the patients' hemograms. In fact, there seemed to be a tendency toward inhibition of leukopoiesis during this period. Since myeloblastic activity in this condition is presumably neoplastic, it is concluded that this study has furnished evidence against the relationship of alkalosis to neoplasia.

Effect of Sulfanilamide on Pneumococci in Sputum.—Frisch studied the effect of sulfanilamide on the pneumococci in the sputum of patients with pneumonia. The administration of sulfanilamide caused a decrease of encapsulated pneumococci in the sputum within twenty-four to thirty-six hours. In some cases the bacteriostatic effect was maintained for from two to four days, at which time the pneumococci again reappeared in the sputum. This reappearance suggested that the organisms had become refractory to the action of sulfanilamide. This fact must be considered in the evaluation of therapy because of its possible influence on the clinical course of the pneumonia. The clumping of encapsulated pneumococci in the sputum of sulfanil-

amide-treated cases at some time during the course of the disease would seem to indicate that the development of active immunity also plays a role in the outcome of the pneumonia. According to the changes in the sputum, the value of sulfanilamide in the treatment of pneumonia seems to depend on its limited ability to inhibit the growth of the pneumococci during the time necessary for the patient to develop his own immune response or to permit a partially immune but overwhelmed host to mobilize his defensive forces effectively.

Journal-Lancet, Minneapolis

60: 45-94 (Feb.) 1940

Diagnosis of Pneumonia. H. A. Reimann, Philadelphia.—p. 45.
Pathogenesis and Pathology of Lobar Pneumonia. C. G. Loosli, Chicago.—p. 49.
Present Status of Treatment of Pneumonia. M. Finland, Boston.—p. 54.
Control of Pneumonia. W. D. Sutliff, New York—p. 57.
Minnesota's Oldest Medical Journal. J. Eckman, Rochester, Minn.—p. 60.
Botulism in South Dakota. C. A. Hunter, J. E. Weiss and C. L. Olson, Vermillion, S. D.—p. 67.
Student Health Service and Medical Practice. C. E. Shepard, Stanford University, Calif.—p. 70.
A Message from the Dead. H. C. Sweany, Chicago.—p. 73.

Journal of the Mount Sinai Hospital, New York

6: 233-302 (Jan.-Feb.) 1940

New Light on Biologic Role of Vitamin E. H. M. Evans, Berkeley, Calif.—p. 233.
Palliative Partial Gastrectomy for Cardiac Gastric Ulcers. R. Colp, New York.—p. 245.
Acute Yellow Atrophy of Liver Following Sulfanilamide Therapy and Avertin Narcosis. R. Ottenberg, New York.—p. 249.
Calcified Protruded Intervertebral Disk. I. Cohen, New York.—p. 255.
Aneurysm of Aorta Due to Rheumatic Fever. A. M. Master and S. Dack, New York.—p. 259.
Nephrotic Syndrome in Diabetes. S. Siegal, New York.—p. 264.
*Chemical Studies on Moccasin Venom: II. Dialysis and Attempts at Fractionation of Hemorrhagic and Hemolytic Components. S. M. Peck and W. Marx, New York.—p. 271.

Moccasin Venom.—Peck and Marx studied the effects of dialysis and of precipitation with different concentrations of ammonium sulfate and with alcohol and acetone on the hemorrhagin and hemolysin principles of moccasin venom. Pseudocrystalline crude venom contains about 14 per cent nitrogen. In 2 per cent solution it gave a positive biuret and xanthoproteic reaction, was coagulated by heat and was precipitated by tannic acid, trichloracetic acid, ethyl alcohol, acetone and from 0.3 to 0.6 saturation with ammonium sulfate. About one half of its dry weight was not dialysable through cellophane 300. The experimental results suggest that the hemorrhagin and hemolysin of moccasin venom are proteins or are associated with proteins. Practically no hemorrhagic or hemolytic activity was associated with the venom lipoids or carbohydrates or with dialysable venom constituents of smaller molecular size. The electrophoretic behavior of the hemorrhagin and hemolysin of moccasin venom showed that both of them were amphoteric. Apparently different in nature from these two constituents, the antihemorrhagic principle of moccasin venom was found, partially purified, in the dialysed supernatant liquid of a native venom solution precipitated at 0.8 saturation with ammonium sulfate. This fraction was free of hemolysin, and its hemorrhagin content was small. In clinical use it was found to be somewhat less effective for the control of certain hemorrhagic diseases than native venom. However, the undesired allergic cutaneous reactions, found after injection of native venom, did not develop in the great majority of cases after this fraction was injected, probably because of its low protein content, proving useful in cases difficult to desensitize.

Journal of Nervous and Mental Disease, New York

91: 141-276 (Feb.) 1940

Poetry in Schizophrenia and Other Psychoses. L. Kerschbaumer, St. Peter, Minn.—p. 141.
Comparison of Medical and Surgical Treatment in Hypertension, with Special Reference to Importance of Psychic Factors in Evaluating Results: Report of Ninety-Two Cases Treated Medically. S. K. Robinson, Chicago.—p. 157.
Insulin Shock Therapy in Korsakoff's Psychosis. P. C. Talkington and T. H. Cheavens, Dallas, Texas.—p. 175.
Neurodermatitis-Pain Shock-Distilled Water. A. N. Foxe, New York.—p. 184.
Simple Version of Aphasia. L. B. Alford, St. Louis.—p. 190.

Journal of Pharmacology & Exper. Therap., Baltimore

68: 1-216 (Jan.) 1940. Partial Index

Prolonged Administration of Large Doses of Acetanilid in Monkeys, with Special Reference to Blood Changes. P. K. Smith, New Haven, Conn.—p. 1.
Studies of Two New Substituted Vinyl Barbituric Acids. J. P. Hendrix, Philadelphia.—p. 22.
II. Effect of Intravenous Injections of Sodium Diphenyl Hydantoinate (Dilantin) on Respiration, Blood Pressure and Vagus Nerve. V. G. Haury and M. E. Drake, Philadelphia.—p. 36.
Use of Pentamethylenetetrazol (Metrazol) as Respiratory Stimulant in Acute Alcoholic Depression. F. D. McCrea and H. M. Taylor, Durham, N. C.—p. 41.
Passage of Bromide, Iodide and Thiocyanate into and out of Cerebrospinal Fluid. G. B. Wallace and B. B. Brodie, with assistance of S. Leshin and E. Brand, New York.—p. 50.
Some Tetrahydroisoquinolines: Note on Relative Lethal and Circulatory Effects of Some 2-Alkyl Derivatives. A. M. Hjort, E. J. deBeer and D. W. Fassett, Tuckahoe, N. Y.—p. 69.
Some New Aspects of Morphine Action: Effect on Intestine and Blood Pressure: Toxicity Studies. D. Slaughter, Dallas, Texas, and E. G. Gross, Iowa City.—p. 96.
Id.: Effects on Pain. D. Slaughter and D. W. Munsell, Dallas, Texas.—p. 104.
Cardiovascular Changes Following Intravenous Administration of Barium Chloride. P. K. Smith, A. W. Winkler and H. E. Hoff, New Haven, Conn.—p. 113.
Toxicity of Lasiocarpine. K. K. Chen, P. N. Harris and H. A. Schulze, Indianapolis.—p. 123.
Action and Toxicity of Platyphylline and Seneciphylline. K. K. Chen, P. N. Harris and C. L. Rose, Indianapolis.—p. 130.
Studies on Mechanism of Protective Action of Xanthine Against Carbon Tetrachloride Poisoning. J. C. Forbes and E. L. Outhouse, Richmond, Va.—p. 185.
Comparative Effects of Propylene Glycol, Other Glycols and Alcohol on Liver Directly. H. W. Newman, W. Van Winkle Jr., N. K. Kennedy and M. C. Morton, San Francisco.—p. 194.
Experimental Comparison of Sulfanilamide and Benzylsulfanilamide, with Particular Reference to Significance of Variations in Experimental Technic. J. S. Lockwood and H. J. Robinson, Rahway, N. J.—p. 201.

Kentucky Medical Journal, Bowling Green

38: 1-46 (Jan.) 1940

Some of the Difficulties of Medical Leadership. H. H. Shoulders, Nashville, Tenn.—p. 2.
*Further Observations on Undulant Fever in Respiratory Tract. O. A. Beatty, Glasgow.—p. 4.
Removal of Ureteral Calculi per Vaginal Route. M. Casper, Louisville.—p. 8.
Appendicitis, with Reference to Mortality. J. A. Kirk, Louisville.—p. 11.
Henoch's Purpura. B. W. Smock, Louisville.—p. 16.
Treatment of Artificial Menopause. R. I. Lee, Boston.—p. 19.
Blood Dyscrasias Associated with Angina. M. L. Rich, Covington, and L. Bach, Newport.—p. 23.
The Psychiatrist's Responsibility to Society and the So-Called Criminal Insane. T. J. Crice, Louisville.—p. 26.
Intrapleural Pneumolysis. A. E. Grimes, Lexington.—p. 33.
Modern Management of Rectal Fistula. R. C. Alley, Lexington.—p. 39.
*Immediate Prognostic Sign of a Smallpox Take. R. Cohen, Louisville.—p. 40.

Undulant Fever and the Respiratory Tract.—Beatty studied ninety-two cases of undulant fever, giving particular attention to the respiratory symptoms and manifestations. He found that 25 per cent of the patients had marked pulmonary symptoms and that the eighteen who had roentgenograms of their chests taken showed pulmonary changes, the most frequent type of change being hilar and peribronchial infiltration. Thickened pleura and pleural adhesions, a bronchopneumonic lesion and two instances of bronchiectasis were also visualized. The pulmonary changes in brucellosis are similar to those associated with chronic sinusitis.

Immediate Prognostic Sign of a Smallpox Take.—Cohen describes a sign which will enable a physician to prognosticate the take as soon as he has finished the vaccination. The author states that he has been able to foretell the result of the last 250 smallpox vaccinations. He outlines the technic. The skin site is cleansed with acetone and then with 95 per cent alcohol. After the skin is dry the virus is dropped onto the skin, which is held firmly and tensely between the thumb and the index finger. Thirty multiple pressure movements are then made through the drop of virus. The drop is allowed to remain four minutes before being wiped off with a cotton sponge containing a small amount of 50 per cent alcohol. The prognostic sign, a raised urticaria-like wheal of pseudopods, not always with an erythema base, becomes evident at this time. Often it is larger than the area traumatized. Whenever this wheal was seen, the child later showed a positive take. Pirquet observed this sign but not to prognosticate a take. The prominence of the wheal depends on the sensitiveness of the skin.

Medical Annals of District of Columbia, Washington

9: 1-36 (Jan.) 1940

Use of Intravenous Basergin in the Third Stage of Labor. E. J. Davin and T. N. Morris, New York.—p. 1.
Hearing Tests in Infancy and Early Childhood. W. A. Wells, Washington.—p. 8.
Diagnostic Study of the Patient with Coronary Artery Disease. G. L. Weller Jr., Washington.—p. 13.
Spontaneous Rupture of Urinary Bladder: Report of Case. P. C. Kiernan, Washington—p. 18.

Michigan State Medical Society Journal, Lansing

39: 1-76 (Jan.) 1940

Democracy at the Crossroads. E. J. McCormick, Toledo, Ohio.—p. 17.
The Electrocardiograph: Its Clinical Value in the Small Hospital. W. M. Bartlett, Benton Harbor.—p. 22.
Adolescence. B. I. Beverly, Chicago.—p. 23.
The "Head Cold" in Infancy and Childhood—A New Method of Treatment. M. O. Cantor and H. S. Berman, Detroit.—p. 33.
Neuritis: Some Observations. H. W. Woltman, Rochester, Minn.—p. 34.
Strabismus in Children. J. W. White, New York.—p. 40.
Obstetric Stethoscope. R. Monfort, Onaway.—p. 41.
Carcinoma of Cervix: Its Management. A. H. Curtis, Chicago.—p. 42.

Minnesota Medicine, St. Paul

23: 1-72 (Jan.) 1940

Care of Automobile Injuries Involving the Face. G. B. New and J. B. Erich, Rochester.—p. 1.
Eye Injuries Due to Mechanical Causes. D. L. Tilderquist, Duluth.—p. 8.
Dysphagia. N. L. Leven, St. Paul.—p. 13.
Treatment of Atopic Dermatitis. E. M. Rusten, Minneapolis.—p. 16.
Symptom of Headache and Some Conditions Suggested by It. H. W. Woltman, Rochester.—p. 19.
Some Clinical Vagaries Associated with Bacterial Endocarditis. A. Hoff, St. Paul.—p. 25.
Fundamental Concepts of Medical Bibliography. T. E. Keys, Rochester.—p. 34.
Cystography in Study of Difficulties Following Prostatic Surgery. T. H. Sweetser, Minneapolis.—p. 40.

Nebraska State Medical Journal, Lincoln

25: 41-80 (Feb.) 1940

Allergy of Nose and Paranasal Sinuses: Principles of Diagnosis and Treatment. F. K. Hansel, St. Louis.—p. 41.
Intratemporal Repair of Facial Nerve for Facial Paralysis. W. A. Cassidy, Omaha.—p. 47.
Rheumatic Heart Disease. M. C. Howard, Omaha.—p. 51.
Id. O. V. Calhoun, Lincoln.—p. 56.
Treatment of Rheumatic Heart Disease. E. Thompson, Omaha.—p. 58.
Present Status of Hypertension. A. D. Cloyd, Omaha.—p. 60.
Acute Gastric Dilatation. W. F. Bowers, Omaha.—p. 64.

New England Journal of Medicine, Boston

222: 79-124 (Jan. 18) 1940

*Treatment of Pilonidal Sinus in Hospital Practice. H. Rogers, Boston.—p. 79.
President's Address. C. O. Coburn, Manchester, N. H.—p. 83.
Therapeutic Limitations of Female Sex Hormones in Gynecologic Conditions. G. V. Smith, Brookline, Mass.—p. 88.
Uremia Following X-Ray Therapy in Leukemia. D. Merrill, Cambridge, Mass.—p. 94.
Massachusetts Medical Society and Bristol South District Medical Society. P. E. Truesdale, Fall River, Mass.—p. 98.
Bacterial Infections of Gastrointestinal Tract. C. S. Keefer, Boston.—p. 105.

Treatment of Pilonidal Sinus.—Rogers says that at the Massachusetts General Hospital the failures in the treatment of pilonidal sinus have been reduced from about about 30 per cent to around 3 per cent since 1932, when a special study of this disease was undertaken. Analysis showed that 30 per cent of 119 patients treated during the eight preceding years had not been cured of their disease. Investigations led to the conclusion that large radical excisions are unnecessary and that the problem is chiefly one of wound healing in the presence of infection. In 1935 the conservative excision of pilonidal sinuses was begun in the outpatient department. The tissues were locally infiltrated with procaine hydrochloride containing epinephrine, and the sinus tract and hair nest were dissected out through a midline skin incision in a nearly bloodless field by means of a small cautery blade. The resultant narrow wound was then packed with gauze and the patient was allowed to go home. In most cases this proved to be a minor procedure requiring from twenty to thirty minutes and causing the patient no more reaction than does the excision of a wen. It was soon discovered, however, that the occasional patient with a lesion complicated by extensive scarring was best managed in the hospital under a general anesthetic. Of the 150 cautery excisions done between 1935 and 1937, fourteen were done in the hospital and 136 in the outpatient department. All the wounds were left open because the natural way for infected wounds to heal is by second intention. The patients returned Mondays and Thursdays to have their dressings done by the surgeon who operated on them. Except for certain cases of definitely delayed healing, the average time was about nine weeks. The wounds healed to a soft, inconspicuous linear scar. The fact that 97 per cent of these patients were cured by a conservative excision and have stayed cured for from one to four years convinces the author that most failures are not due to incomplete excision of diseased tissue but to faulty wound healing caused by infection and retained dead space, that there is no practical or theoretical justification for the radical excision of large blocks of normal skin and subcutaneous tissue, and that in unselected cases the highest percentage of cures can be obtained by conservative excision of the sinus tract and hair nest under direct vision, followed by solid second intention healing of the open wound, with the patient ambulatory and under the care of the same surgeon from first to last.

New Orleans Medical and Surgical Journal

92: 349-412 (Jan.) 1940

*Relation of Histaminase to Intestinal Toxemia and Asthma: Preliminary Report. A. Eustis, New Orleans.—p. 349.
Physiotherapy in Simple Fractures Intersecting Joints. G. A. Caldwell, New Orleans.—p. 352.
More Common Fractures of Bones of Hand. A. A. Tisdale, Lafayette, La.—p. 356.
Acute Perforated Gastric and Duodenal Ulcer. C. B. Odom and M. DeBakey, New Orleans.—p. 359.
Peptic Ulcers in the Negro. M. Campagna, New Orleans.—p. 366.
Differential Diagnosis of Essential (Primary Arteriolar) and Secondary Hypertension. M. W. Matthews, Shreveport, La.—p. 368.
Concepts of Treatment of Hypertension. I. L. Robbins, New Orleans.—p. 375.
Technical and Practical Aspects of Milk Control. P. S. Parrino, Franklin, La.—p. 381.
Milk in Its Relation to Public Health. R. A. Strong, New Orleans.—p. 388.

Histaminase and Asthma.—Eustis reports four cases of allergic asthma successfully treated with histaminase. The product deteriorates rapidly and should be kept in a refrigerator. To overcome the effects of histamine in the intestinal canal, large doses of histaminase may be given at the start. By limiting the amount of ingested histidine, relatively small doses of histaminase are required. Until the specific foodstuff allergen is identified and desensitization carried out, histaminase may possibly control the attacks.

New York State Journal of Medicine, New York

40: 77-152 (Jan. 15) 1940

*Sulfapyridine Urolithiasis. M. R. Keen, Huntington.—p. 83.
Studies in Growth and Development of Children. H. Bakwin and Ruth Morris Bakwin, New York.—p. 88.
Roentgen Ray Therapy of Acute Mastitis During Lactation. Harriet C. McIntosh, New York.—p. 92.
Psoriasis—What to Do About It. H. H. Bauckus, Buffalo, and A. V. Kwak, Depew.—p. 96.
Teaching and Practice of Neurology and Psychiatry in the Outpatient Department. N. R. Chambers, Syracuse.—p. 101.
X-Ray Treatment of Inflammatory Conditions. J. R. Carty, New York.—p. 106.
Fractures in Rural Communities. M. H. Atkinson, Catskill.—p. 110.
Statistical Review of Eclampsia: Based on Twelve Years' Experience in Israel Zion Hospital. F. Weintraub, Brooklyn.—p. 112.
Value of Blood Sedimentation Rate in Intracranial Tumors. W. O. Klingman, R. W. Laidlaw and H. Spotnitz, New York.—p. 117.
Further Observations in Sulfanilamide Therapy of Gonococcic Infections. C. J. Van Slyke and J. F. Mahoney, Staten Island.—p. 122.

Sulfapyridine Urolithiasis.—Keen cites two cases of acute renal obstruction following the ingestion of sulfapyridine in amounts varying from 9 to 24 Gm. Crystals simulating sulfapyridine were found. Red blood cells and casts were present in the urine from the affected kidneys. The disorder of one patient subsided spontaneously following catheter drainage and increased fluid intake. The other patient has had several recurrent attacks of right lumbar pain. A recheck intravenous pyelography showed a small defect in the right renal pelvis (residual clot?). At no time did the urinary output diminish to an alarming degree. Unfortunately, blood nitrogen studies were not done. A moderate leukocytosis with a polymorphonuclear increase was observed. The factors in the production of sulfapyridine calculi may be (1) the marked dehydration of a toxic pneumonia patient and (2) the proved limited solubility of sulfapyridine (1:1,000)

at room temperature and the even greater insolubility of the acetylated derivatives. The possibilities of future urologic complications (nucleus of permanent stone formation and ureteral wall damage) are stressed.

North Carolina Medical Journal, Winston-Salem

1: 1-64 (Jan.) 1940

The Doctor and Socialized Medicine. J. B. Sidbury, Wilmington.—p. 1.
Lewis Burgin McBrayer and the State Sanatorium. C. H. Cocke, Asheville.—p. 8.
Pneumoconiosis. D. M. Brumfiel, Saranac Lake, N. Y.—p. 13.
Various Forms of Encephalitis. B. J. Alpers, Philadelphia.—p. 18.
Coordination of Public Health and Related Agencies. C. V. Reynolds, Raleigh.—p. 24.
*Recent Studies in Care of Late Gestational Toxemias. B. Harden, Burlington.—p. 27.
New Urologic Procedures of General Surgical Interest. H. W. McKay, Charlotte.—p. 29.
Clinical Experience with Sulfapyridine. W. A. MacColl, Durham.—p. 32.
Some Problems of Diphtheria Control. J. C. Knox, Raleigh.—p. 37.
Electrocardiogram as Aid in Cardiac Diagnosis. J. H. McNeill, North Wilkesboro.—p. 39.

Care of Late Gestational Toxemias.—Harden believes that protein dissipation bringing about a marked nitrogen deficit plays an important part in the early and late toxemias of pregnancy. He instituted a regimen to control this deficit. Patients were required to have at least eight hours of rest each day, foci of infection were eliminated whenever possible, fecal elimination was secured by the use of milk of magnesia or soapsuds enemas, and each patient was given a sufficient calory intake to satisfy her basal needs plus the requirements of the infant. During seven years, 704 patients with late gestational toxemias were admitted to the hospital and convulsive seizures did not develop in any patient under this regimen, yet the number of eclamptic patients referred to the hospital in convulsions maintained the same incidence in the community as that previous to the adoption of this regimen.

Oklahoma State Medical Assn. Journal, McAlester

33: 1-52 (Jan.) 1940

Primary Panniculitis Afebrile in Type and Associated with Sclerodermatous-like Changes. O. G. Hazel and J. Lamb, Oklahoma City.—p. 1.
Consideration of Certain Fractures of Elbow. D. H. O'Donoghue, Oklahoma City.—p. 5.
Primary Glaucoma. E. D. McKay, Oklahoma City.—p. 8.
Nasal Plastic Operations. M. C. England, Woodward.—p. 10.
Lymphopathia Venerea. J. Fulcher, Tulsa.—p. 12.
*Use of Antiseptic Anesthetic Agent Locally in Extensive Burn. P. Nagle, Oklahoma City.—p. 14.

Antiseptic Agent Used Locally for Burns.—Nagle reports the management of a major burn with an anesthetic bacteriostatic topical dressing. The burn resulted from gasoline slopped over the left trouser leg. This leg was severely burned and both hands were burned in the patient's effort to put out the fire. The patient was seen four days later, at which time the examination revealed second and third degree burns of the entire circumference of the left leg from the ankle to the midthigh, blistering burns of the right hand and blistering and full thickness "cooking" burns of the left palm and wrist. The burned area had been treated by various agents. The areas of full thickness destruction were beginning to devitalize and pus was apparent. Adequate dressing of the leg was impossible because of the patient's refusal to tolerate pain. Annular gauze dressings saturated in an oil emulsion anesthetic preparation (Foille) and changed every four hours were instituted. The immediate response of the patient was gratifying. With each dressing, some of the free débris of the burn came away until only the devitalized but securely fixed skin required removal. At the time this anesthetic, bacteriostatic vegetable oil emulsion was first applied, infection was beginning. This was arrested in twenty-four hours. There was never an elevation of temperature. The patient was discharged in about ten weeks. Epithelization progressed at a normal rate and the influence of this preparation on the growth and take of the cutaneous grafts was not unfavorable. The preparation contains 0.14 per cent of potassium iodide, 0.25 per cent of calcium iodide, 0.02 per cent of calcium thiosulfate, 0.39 per cent of calcium soap, 0.2 per cent of oxyquinoline base, 1.4 per cent of ethyl alcohol by volume, 2.8 per cent of phenol, 1.3 per cent of ethyl aminobenzoate and 90.11 per cent of vegetable oil as a vehicle.

Psychiatric Quarterly, Utica, N. Y.

14: 1-228 (Jan.) 1940

Freud—The Man (Born in Freiberg, Moravia, May 6, 1856. Died Sept. 23, 1939, in London, England). C. P. McCord, Albany, N. Y.—p. 3.
Sexual Manifestations in Neurotic and Psychotic Symptoms. A. A. Brill, New York.—p. 9.
Clinicopathologic Study of Case of Pick's Disease. A. Ferraro and G. A. Jervis, New York.—p. 17.
Suicide as Wish Fulfilment. I. Hendrick, Boston.—p. 30.
Effect of Metrazol Injections on Electro-Encephalogram. H. Strauss and W. E. Rahm Jr., New York.—p. 43.
Psychopathic States with Psychotic Reactions. J. L. Nelson and J. Zimmerman, Brooklyn.—p. 49.
Six Cases of Psychosis Associated with Illuminating Gas Poisoning: Brief Review of Literature. A. G. Rodgers Jr., Central Islip, N. Y.—p. 61.
Combined Insulin and Metrazol in Treatment of Psychoses. S. J. Tillim, Amityville, N. Y.—p. 81.
Prepsychotic Personality in Alcoholic Psychoses. E. Davidoff and C. A. Whitaker, Syracuse, N. Y.—p. 103.
Aggravation of Mental Symptoms by Excessive Use of Hypnotics and Sedatives. L. S. Wondolowski, Middletown, N. Y.—p. 121.
Injuries Sustained During Course of Metrazol Shock Therapy. C. C. Graves and F. P. Pignataro, Marlboro, N. J.—p. 128.
Malaria Therapy for the Nonhospitalized Case of Neurosyphilis (Malaria Therapy in the Community). W. A. Thompson, Orangeburg, N. Y.—p. 135.
Schizophrenic "Deterioration." S. R. Lehrman, Utica, N. Y.—p. 140.
Folliculin Menformon (Theelin) Treatment of Involutional Melancholia. J. Notkin, B. Dennes and V. Huddart, Poughkeepsie, N. Y.—p. 157.
Involutional Melancholia: Study of Syndrome and Report on Use of Estrogen. C. L. Wittson, Central Islip, N. Y.—p. 167.
Five Years Work with Cerebral Palsy: Critical Analysis. J. Sirkin, Newark, N. Y.—p. 185.
Acute Heterosexual Inadequacy: II. In the Female. Jane E. Oltman, Niantic, Conn., and S. Friedman, Newtown, Conn.—p. 194.

Public Health Reports, Washington, D. C.

55: 1-40 (Jan. 5) 1940

Disabling Morbidity Among Industrial Workers, Third Quarter and the First Nine Months of 1939. W. M. Gafafer.—p. 1.
Mortality Rates and Economic Status in Rural Areas. H. F. Dorn.—p. 3.
Effect of Sulfapyridine and Sulfanilamide With and Without Serum in Experimental Meningococcic Infection. Sarah E. Branham.—p. 12.

55: 41-106 (Jan. 12) 1940

Rocky Mountain Spotted Fever: Treatment of Infected Laboratory Animals with Immune Rabbit Serum. N. H. Topping.—p. 41.
Cases and Days of Illness Among Males and Females, with Special Reference to Confinement to Bed: Based on 9,000 Families Visited Periodically for Twelve Months, 1928-1931. S. D. Collins.—p. 47.

55: 107-134 (Jan. 19) 1940

Epidemic and Endemic Typhus: Protective Value for Guinea Pigs of Vaccines Prepared from Infected Tissues of Developing Chick Embryo. H. R. Cox and E. J. Bell.—p. 110.
Pathology of Poliomyelitis Experimentally Induced in Eastern Cotton Rat, Sigmodon Hispidus Hispidus. R. D. Lillie and C. Armstrong.—p. 115.
Anopheles Walkeri (Theobald): A Wild-Caught Specimen Harboring Malarial Plasmodia. F. B. Bang, G. E. Quinby and T. W. Simpson.—p. 119.

55: 135-186 (Jan. 26) 1940

Disabling Diseases of Childhood: Their Characteristics and Medical Care as Observed in 500,000 Children in Eighty-Three Cities Canvassed in the National Health Survey, 1935-1936: I. Characteristics and Leading Causes. Dorothy F. Holland.—p. 135.
*Ocular Manifestations of Ariboflavinosis. H. D. Kruse, V. P. Sydenstricker, W. H. Sebrell and H. M. Cleckley.—p. 157.
Origin of Induced Pulmonary Tumors in Strain A Mice. H. G. Grady and H. L. Stewart.—p. 169.

Ocular Manifestations of Ariboflavinosis.—Kruse and his associates describe the ocular changes of nine patients known to be receiving insufficient riboflavin. Beneficial effects followed riboflavin therapy. From slit lamp examination and ocular signs the principal manifestation was found to be a keratitis. The corneal lesions improved or disappeared on riboflavin therapy and recurred when treatment was discontinued. Two cases of keratitis associated with syphilis but resistant to antisyphilitic treatment were studied without any attempt being made to control the diet. Riboflavin therapy appeared to be distinctly beneficial in these cases. When first seen only four of the nine patients were free from other deficiency disease. Six patients were hospitalized and three were treated as outpatients. All had ocular changes in addition to the keratitis, for which there were symptoms and signs. Itching, burning and a sensation of roughness of the eyes with mild photophobia were rather common complaints; severe photophobia, dimness of vision in poor light and partial blindness were complained of less frequently. Corneal opacities of five patients were grossly visible. Five patients showed congestion of the bulbar conjunctiva with marked circumcorneal injection. Associated with the bulbar

congestion was injection of the fornix conjunctivae. Most of the patients showed impaired visual acuity by test. No definite abnormalities in the fundi were seen on ophthalmoscopic examination. The keratitis occurred with other signs of ariboflavinosis: cheilosis, glossitis and seborrheic dermatitis. It corresponded with them in progression or regression, according to discontinuance or administration, respectively, of riboflavin. The rapid and almost complete response of the keratitis associated with syphilis to riboflavin therapy of the two patients suggests that there may be a riboflavin involvement.

Radiology, Syracuse, N. Y.

34: 1-130 (Jan.) 1940

Cancer of Stomach (Carman Lecture). W. C. MacCarty Sr., Rochester, Minn.—p. 1.
Physical Factors Influencing Difference Between 200 and 500 Kilovolt Radiation. K. E. Corrigan, Detroit.—p. 8.
Differences Between 200 Kilovolt and Supervoltage Roentgen Therapy. R. Dresser, J. C. Rude and B. J. Cosman, Boston.—p. 13.
Biologic Measurement of High Voltage Radiations. C. Packard, New York.—p. 17.
Late Sequelae of Divergent Biologic Skin Effects Produced by Roentgen Irradiation with Varying Voltages. E. R. Witwer and T. Leucutia, Detroit.—p. 24.
Clinical Aspects of Supervoltage Roentgen Therapy in Cancer. W. E. Costolow, Los Angeles.—p. 28.
Reaction of Carcinomas of Cervix to Known Doses of 800 Kilovolt Roentgen Rays, Five Year, Four Year and Three Year Survival Rates. H. Schmitz, Chicago.—p. 34.
*Roentgen Ray Treatment of Hyperthyroidism. G. E. Pfahler, Philadelphia.—p. 43.
Chronic Gastric Volvulus. A. C. Singleton, Toronto.—p. 53.
Miniature Films in Chest Surveys. H. E. Potter, Chicago.—p. 62.
Pericolic Membranes. W. R. Cashion, Brooklyn.—p. 66.
Pathogenesis and Radium Therapy of Mixed Tumors of Salivary Glands: Illustrative Cases. I. Levin, New York.—p. 69.
Contributory Negligence as It Applies to Medical Malpractice. I. S. Trostler, Chicago.—p. 76.
First Measurements with Spanish Standard for Absolute Determination of International Roentgen Unit. H. T. Plasencia.—p. 82.

Roentgen Treatment of Hyperthyroidism. — Pfahler believes that irradiation is indicated in all cases of hyperthyroidism in which the patient is not in crisis or is not suffering from definite pressure symptoms. On the other hand, operation should be recommended in all simple or nontoxic goiters unless there is some contraindication, in which case a moderate amount of irradiation may be used. Sometimes brilliant results are obtained, even when large goiters of this type are present. With irradiation the fear of operation is eliminated and the patient is more likely to come under treatment early before cardiac damage has taken place. There is no pain or shock and no great inconvenience. Patients with advanced disease or serious cardiac complications may be treated without shock. There is no risk of mortality from the treatment. The end results are about equal to those obtained by surgery. The objections to irradiation that must be considered are the danger of burns, telangiectasis and skin atrophy, exacerbation of symptoms, myxedema, difficulty in subsequent surgical treatment, slowness of response to irradiation and the possibility of permanent cardiac impairment developing during the period of prolonged irradiation.

Review of Gastroenterology, New York

7: 1-102 (Jan.-Feb.) 1940

Three Clinical Signs Useful in Diagnosis of Chronic Amebic Colitis with No Dysenteric Symptoms. A. Castellani, New Orleans.—p. 1.
Immunity in Hookworm Disease. W. W. Cort and G. F. Otto, Baltimore.—p. 2.
Relationship of Bacillary Dysentery Infections to Chronic Intermittent Diarrheas. R. Turell, Brooklyn.—p. 14.
Relation Between Peptic Ulcer and Cancer of Stomach from the Genetic Point of View. J. Bauer, New Orleans.—p. 21.
Critical Evaluation of Parenteral Treatment in Peptic Ulcer. E. Granet, New York.—p. 25.
Fragmentation of Duodenal Bulb: Roentgen Sign of Duodenal Ulcer. M. Feldman, Baltimore.—p. 35.
Effects of Hydrogels on Configuration and Functions of Colon: Preliminary Study. D. Stein and J. Gelehrter, Philadelphia.—p. 39.
Hernia in Its Relation to Gastrointestinal Symptoms. A. R. Koontz, Baltimore.—p. 47.
Evaluation of Liver Function Tests. F. W. Konzelmann, Philadelphia.—p. 51.
Some Gallbladder Problems in Relation to Dyspepsia. E. H. Hutchins, Baltimore.—p. 59.
Critique on Duodenobiliary Drainage. N. W. Elton, Buffalo.—p. 65.
Reflections on Surgery of Gallbladder and Biliary Tract. I. Cohn, New Orleans.—p. 71.
Eppinger's Liver Diseases: Review. W. Rado, Newark, N. J.—p. 79.

Southern Surgeon, Atlanta, Ga.

9: 1-74 (Jan.) 1940

Some Cardiovascular Problems of Interest to Surgeons. H. Roesler, Philadelphia.—p. 1.
Infections of Hand. D. L. Maguire, Charleston, S. C.—p. 11.
Cinefluorography. W. H. Stewart and F. H. Ghiselin, New York.—p. 21.
Bursitis About the Shoulder. A. H. Weiland and C. R. Burbacher, Coral Gables, Fla.—p. 26.
Rehabilitation of the Physically Handicapped. H. H. Kessler, Newark, N. J.—p. 34.
Hyperparathyroidism: Report of Nine Cases. D. Hart and C. E. Gardner Jr., Durham, N. C.—p. 41.
Review of Hirschsprung's Disease: Report of Case Treated by Presacral Sympathectomy. J. D. Hancock, Louisville, Ky.—p. 59.

Surgery, St. Louis

7: 1-166 (Jan.) 1940

Technic for Splanchnic Resection for Hypertension: Preliminary Report. R. H. Smithwick, Boston.—p. 1.
The Silk Technic: Experimental Observations. P. Shambaugh, Chicago.—p. 9.
*Immediate Strength of Sutured Wound. E. L. Howes, Washington, D. C.—p. 24.
Reaction of Experimental Sarcomas to Wound Healing Stimulus. O. C. Julian and A. Brunschwig, Chicago.—p. 32.
Experimental Study of Bacteriology of Perforation Peritonitis. Cora Rust Owen, Minneapolis.—p. 37.
*Trauma and Appendicitis. J. E. A. Connell, Denver.—p. 47.
*Fever Therapy in Treatment of Mechanical Intestinal Obstruction Due to Pelvic Inflammatory Disease: Report of Two Cases. B. A. Smith Jr., Minneapolis.—p. 61.
Anorectal Complications of Chronic Ulcerative Colitis, with Several Illustrative Cases. N. D. Smith and R. J. Jackman, Rochester, Minn.—p. 69.
Vasoconstrictor Action of Epinephrine on Digital Arterioles of Man Before and After Sympathectomy. T. J. Fatherree, A. W. Adson and E. V. Allen, Rochester, Minn.—p. 75.
Consideration of Value and Indications for Encephaloventriculography, with Especial Reference to Its Use in Borderline Neurosurgical Conditions. J. M. Meredith, University, Va.—p. 95.
Postoperative Myxedema. W. D. Wilson and C. W. Mayo, Rochester, Minn.—p. 117.
Mixed Tumor (Carcinosarcoma) of Breast. S. W. Harrington and J. M. Miller, Rochester, Minn.—p. 122.
Fibrosarcoma of Mammary Gland. S. W. Harrington and J. M. Miller, Rochester, Minn.—p. 129.
Painful Divided Navicular of Foot: Its Diagnosis and Treatment. J. A. Schindler and W. B. Gnagi Jr., Monroe, Wis.—p. 133.

Immediate Strength of Sutured Wound.—Howes discusses the degree of strength which can be given to the repair of a wound by means of sutures. The common belief is that the strength of the sutured wound is dependent on the strength of the sutures. Actually, the number of sutures is a contributing factor but the holding power of the tissue really determines the strength of the union, and the strength of the sutures in the wound is much less than generally supposed. As far as strength is concerned there is no need of suturing any other tissue but fascia, except to eliminate dead space or to prevent herniation of the peritoneum. When multiple sutures are used there is no need to use a suture with a functional strength stronger than No. 0 catgut, because the holding power strengths of all tissues are less and really limit the strength of the repair. The use of any larger suture simply provides an excess amount of foreign material without greater strength and presents the possibility of untoward wound healing. Increasing the number of sutures increases the amount of holding power of the tissues but, more important still, increases in direct proportion the functioning strength of the sutures, providing a better ratio of functioning strength of holding power. Therefore less strain is thrown on each suture. Increasing the bite of tissue enhances holding power to a slight degree, but only in fascia. The danger of tissue necrosis is so great with the use of the deep-bite suture that it should be used sparingly, and better healing is usually obtained when it is not used. Interrupted sutures are recommended because the strength of each unit is preserved when the suture material is being absorbed or the holding power is lost in one portion of a wound and not because they give greater strength than the continuous suture. Under similar conditions the integrity of continuous suture would be entirely lost.

Trauma and Appendicitis.—Data in response to a questionnaire on the incidence of trauma (external violence or muscular strain) in appendicitis in the experience of eighty-one surgeons operating in 72,803 cases of acute appendicitis are presented by Connell. All these surgeons agree that trauma as an etiologic

factor is rare. Thirty-one feel that it is possible for trauma to cause appendicitis, six that a previously diseased appendix might be aggravated by trauma but that appendicitis cannot be initiated by an injury, and eleven that a strain can play a part in the etiology of appendicitis; twenty-four saw cases in which they believed trauma entered into the etiology. Questionnaires from thirty hospitals reporting 49,604 cases of acute appendicitis gave a history of trauma in only eleven cases. The author cannot accept the theory that trauma forces cecal contents into the appendix or forces fecaliths farther into the appendical lumen. If this were a fact, many more cases of acute appendicitis would be encountered following the numerous automobile accidents seen today. He can conceive of an appendix being traumatized by a direct blow if it lies over the brim of the pelvis, or it could possibly be bruised if close to the anterior abdominal wall in an extremely thin individual; but in such instances there would be other evidence of trauma.

Fever Therapy for Intestinal Obstruction Due to Pelvic Disease.—Smith reports two cases of mechanical obstruction of the small intestine, secondary to gonorrheal adnexitis, treated by hyperthermia. The hyperpyrexia must be carefully supervised. The treatment is delayed, if possible, until a positive or stationary weight balance is maintained. Dehydration, chloride depletion and alkalosis are readily thrown out of balance during artificial fever in the presence of intestinal obstruction and must be checked frequently. A "wet" chamber is used to produce and maintain fever, as fluid and chloride losses by perspiration are less and hyperventilation is less marked than when a "dry" chamber is used. From reported cases the impression is gained that most mechanical intestinal obstruction in gonorrheal adnexitis is caused by agglutination of intestinal loops to the inflammatory mass; it is probable that this is true in most of the cases resistant to the usual conservative regimen.

Tennessee State Medical Assn. Journal, Nashville

33: 1-38 (Jan.) 1940

Brain Tumors in Childhood. C. Pilcher, Nashville.—p. 1.
Brain Abscess and Meningitis Caused by Type III Pneumococci—Cure with Sulfapyradine. T. F. Frist and E. Rippy, Nashville.—p. 8.
Brucellosis: Report of Cases. W. R. Blue, Memphis.—p. 9.

West Virginia Medical Journal, Charleston

36: 1-48 (Jan.) 1940

One-Stage Combined Abdominoperineal Resection for Carcinoma of Rectum, Rectosigmoid and Sigmoid. C. W. Mayo, Rochester, Minn.—p. 1.
*Treatment of Sinusitis in Children. E. C. Mitchell, Memphis, Tenn.—p. 8.
Home Obstetrics. H. E. Beard, Huntington.—p. 18.
Value of Determination of Muscle Imbalance in Refraction. C. T. St. Clair Jr., Bluefield.—p. 22.
Rocky Mountain Spotted Fever: Report of Two Fatal Cases. J. S. Pearson, Huntington.—p. 26.
Diagnostic Problems. J. D. Romino, Fairmont.—p. 28.

Treatment of Sinusitis in Children.—Mitchell declares that development and growth of the sinuses depend on the establishment of proper pneumatization. An individual with normally developed sinuses may have attacks of acute sinusitis; chronic sinusitis, however, is associated with deficient development. The undeveloped sinus is usually diseased. When the tonsils are removed early in life, additional work is thrown on the sinuses, which play an intimate part in immunization against diseases that may arise from infections of the upper part of the respiratory tract. Kaiser, on examination of school children with and without tonsils, found sinus infection more prevalent in those whose tonsils had been removed during their early years. In some cases of sinusitis, extension of the infectious process is apparent in the chest; in fact, this observation may be so pronounced as to lead one to suspect tuberculosis. In addition to general physical studies, every patient with sinusitis should have an allergic study. In allergic sinusitis, in addition to other symptoms, the mucous membrane is pale and the secretion is fluid. In chronic sinusitis from infection, the mucous membrane of the posterior nares, particularly in the region of Waldeyer's ring, is boggy and red and secretes a thick mucus. Further, there is generally a fluid level, especially if the antrums are the foci of infection. Frequently, both infection and allergy play a part.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

1: 1-40 (Jan. 6) 1940

Pulmonary Circulation—Before and After Harvey. R. A. Young.—p. 1.
Bacterial Endocarditis: Possibility of Cure by Sulfonamides: Report of Case. C. T. Andrews.—p. 5.
Nocturnal Enuresis. Doris M. Odlum.—p. 8.
*Treatment of Mental Disorders with Male Sex Hormone. A. Guirdham.—p. 10.
Surgical Treatment of Trigeminal Neuralgia. G. F. Rowbotham.—p. 12.

Treatment of Mental Disorders with Androgen.—Guirdham used testosterone propionate and androsterone benzoate for the treatment of four mentally disordered male patients. With one partial exception, there was no hypogonadism present. In case 1 the first beneficial mental effects from the treatment embodied a rapid transition from a psychotic to a psychoneurotic state. Acute anxiety and obsessive tendencies were dispelled. Patient 2 improved far beyond expectations. In addition to profound obsessional tendencies and early signs of schizophrenia there were such legal complications as thefts. In the third case anything other than the most inconsiderable alleviation of symptoms could not be expected, as the patient was a grossly arteriosclerotic man aged 74 with melancholia and delusions of visceral function and financial ruin. Patient 4 was profoundly hypochondriacal before treatment was initiated. The prognosis in two of these cases was considered hopeless. Conditions of undoubted gravity have been remedied. Treatment with sex hormones is a rational procedure in postclimacteric conditions. The author believes that the form of psychoneurotic symptoms is largely determined by the degree of stability shown by the vegetative nervous system, and this in its turn is dependent on glandular activity.

Clinical Science, London

4: 103-216 (Dec.) 1939

Observations on Oxygen Content of Venous Blood from Arm Vein and on Oxygen Consumption of Resting Human Muscle. H. E. Holling.—p. 103.
Cure of Experimental Renal Hypertension. S. Cerqua and A. Samaan.—p. 113.
*Insulin-Sensitive and Insulin-Insensitive Types of Diabetes Mellitus. H. P. Himsworth and R. B. Kerr.—p. 119.
*Age and Insulin Sensitivity. H. P. Himsworth and R. B. Kerr.—p. 153.
Fiber Dissociation Produced by Cooling Human Nerves. R. G. Bickford.—p. 159.
Rapid Method of Determining Lung Capacity. J. McMichael.—p. 167.
Postural Changes in Lung Volume. J. McMichael and J. P. McGibbon.—p. 175.
Effect of Estrogens on Urinary Creatinine of Castrate and Menopausal Women. E. P. Sharpey-Schafer and I. Schrire.—p. 185.
Some Painful Joint Conditions and Their Relation to Osteo-Arthritis. J. H. Kellgren.—p. 193.
Hypertension Produced in Rabbit by Prolonged Renin Infusion. Janet R. Hill and G. W. Pickering.—p. 207.

Insulin Sensitivity and Diabetes Mellitus.—Himsworth and Kerr state that under standard conditions of diet and environment diabetic patients react in one of two ways to the insulin-dextrose test and by means of the test diabetes may be divided into two distinct types: the insulin sensitive and the insulin insensitive. The two types of diabetes can be differentiated on the basis of the speed with which they react to insulin. In the insulin sensitive type insulin comes into action rapidly, in the insulin insensitive type insulin comes into action slowly. Insulin sensitive diabetic patients react favorably to increase of dietary carbohydrate. In the insulin insensitive diabetic patient increase of dietary carbohydrate causes increase in glycosuria, a tendency to higher fasting blood sugar levels, impairment of sugar tolerance and little or possibly no increase in sensitivity to insulin. Corresponding to the two types of diabetes, differentiated by the insulin dextrose test, two clinical groups of patients can be distinguished. The insulin sensitive diabetic patients tend to be younger, to be thin and to have a normal blood pressure and healthy arteries. In them the disease is sudden and severe at onset. In them ketosis develops easily and they react to a slight excess of insulin with a hypoglycemic attack. The insulin insensitive diabetic patients tend to be older, to be obese,

to have hypertension and to exhibit arteriosclerosis. The onset of the disease in them is insidious. In them ketosis develops rarely and they can tolerate an overdose of insulin without showing symptoms of hypoglycemia.

Age and Insulin Sensitivity.—Himsworth and Kerr present evidence that in healthy subjects insulin sensitivity varies with age. Thirteen subjects were investigated, two women and eleven men. Their ages varied from 18 to 64 years. Nine of the subjects were healthy. All received a diet of 1,750 calories, containing 175 Gm. of carbohydrate, for at least one week before the dextrose tolerance and insulin-dextrose tests were performed. The standard dose of dextrose given by mouth in both tests was 30 Gm. per square meter of body surface; the standard dose of insulin injected intravenously in the insulin-dextrose test was 5 units per square meter of body surface. Both tests were terminated after one hour. As age increases the dextrose tolerance area tends to increase; that is, dextrose tolerance diminishes. Parallel with this tendency to diminution of dextrose tolerance there is a tendency to diminution of insulin sensitivity as shown by a diminishing insulin-dextrose ratio. In healthy subjects less than 40 years of age the insulin-dextrose ratio, when taking a diet containing 175 Gm. of carbohydrate, averages 1.01 and in those more than 40 years of age it averages 0.78; in insulin-sensitive diabetic patients less than 40 years of age it averages 1.44 and in those more than 40 years of age it averages 1.18; in insulin-insensitive diabetic patients less than 40 years of age the figure is 0.56 and in those more than 40 years of age it is 0.49. Thus in both types of diabetic patients and in normal subjects sensitivity to insulin tends to decrease as age advances. The older healthy subjects with impaired insulin sensitivity are regarded as potentially diabetic, that is of the insulin-insensitive type, and their impaired sensitivity to insulin is regarded as an abnormality which is not sufficiently advanced to be incompatible with health.

Edinburgh Medical Journal

47: 1-80 (Jan.) 1940

Dysmenorrhea. R. W. Johnstone.—p. 1.
Psychosomatic Medicine. R. G. Gordon.—p. 16.
Physical Education in the University of Edinburgh. J. K. Slater.—p. 32.
*Observations on Treatment of Severe Hematemesis and Melena. L. D. W. Scott.—p. 49.
*Manifestations of Tuberculosis in Ophthalmic Practice. H. M. Traquair.—p. 57.

Treatment of Severe Hematemesis and Melena.—For the treatment of sixty cases of severe hematemesis and melena Scott used the Witts modification (fluid feeding for the first forty-eight hours) of Meulengracht's technic of immediate feeding. The patients were suffering from peptic ulceration on admission. They included all those who were admitted with severe bleeding from the upper part of the alimentary tract with or without a previcus history of dyspepsia but with no clinical evidence of malignant disease or any extra-alimentary lesion which might have been the cause of the hemorrhage. This excluded patients with ascites, jaundice, hepatic enlargement or signs of hemorrhagic disorder of the blood. Three of the selected patients died as the result of hemorrhage, giving a mortality of 5 per cent and a corrected mortality of 3.3 per cent, as one of those who died was suffering from severe aortic regurgitation in addition to the gastrointestinal hemorrhage. This was regarded as a most satisfactory result. As there is no general agreement concerning the death rate from severe gastroduodenal bleeding, caution must be exercised in attributing the low mortality in the present series to the effect of the treatment used. For comparison, fifty patients with severe hematemesis were treated by the standard method of initial starvation. There were seven deaths in this group, a mortality of 14 per cent; one patient died within thirty minutes of admission to the hospital and therefore cannot be regarded as a death under treatment; therefore the corrected mortality is 12 per cent. The reduction in the death rate of patients receiving immediate feeding could not be attributed to the change in treatment alone, as this group contained a greater proportion of young persons. The extent of the lesion in fatal cases of severe hematemesis and melena makes it doubtful that treatment by immediate feeding can be of the greatest value in saving life. Low mortality figures published in the literature are most probably due to a comparative absence of the most severe type of cases in the series examined. The author's experience with the method of immediate feeding confirms the observation that the method is not harmful and is preferable to treatment by preliminary starvation; but a study of the pathologic changes of fatal cases makes it unlikely that a striking reduction in the mortality can be secured by this means alone.

Ophthalmic Manifestations of Tuberculosis.—Traquair declares that apart from maldevelopments, injuries and external infections there are no diseases of the eye in the sense that the disease originates and is limited to the eye. Ocular lesions other than injuries, external infections and maldevelopments are manifestations in the eye of some general condition frequently based on an inadequate power of resistance, which, in its turn, is often the result of defective nutrition. Tuberculosis of the eye affects it in two ways: as an allergic response and as an actual infection by the tubercle bacilli. In the first the tissues of the eye can be sensitized as part of a general sensitization and also locally and may give a violent allergic response. In actual infection by tubercle bacilli, the bacilli usually enter the body by the alimentary or respiratory channels. Ocular tuberculosis usually occurs clinically as a blood infection in previously infected persons who are potentially allergic to tuberculoprotein. It is uncommon in patients with active and gross tuberculous foci, such as inmates of sanatoriums, but is typically found in patients who show apparently healed pulmonary tuberculosis and tuberculo-adenitis. Tubercle bacilli may be present in the blood in some cases. It is characteristic of all forms of tuberculosis in association with the eye that the patient does not present gross manifestations of an active tuberculous infection elsewhere. The patients frequently show little, if any, outward evidence of tuberculous infection but, on careful search, glands in the neck, roentgenograms indicative of affected glands in the hilus or mediastinum or x-ray signs in the lungs themselves may be found. The diagnosis is based on the careful examination of the eye, including the clinical picture as a whole. If cutaneous tests with old tuberculin are used, great care should be taken to avoid a local reaction. Treatment is both local and general. Local treatment consists of remedies applied directly by the ophthalmologist to relieve symptoms and local ocular complications. The only treatment of real importance is the general treatment, which is the treatment of tuberculosis. It is essential to recognize that the patients are primarily suffering from tuberculosis and secondarily from a disease of the eye. Tuberculin in carefully graduated doses is of some value and may be used in all cases except scrofulous ophthalmia.

Lancet, London

1: 1-60 (Jan. 6) 1940

Pulmonary Circulation Before and After Harvey. R. A. Young.—p. 1.
*Diseases of Right Middle Lobe of Lung. A. L. Punch.—p. 5.
Intubation of Small Intestine: Demonstration and Localization of Partially Obstructive Lesions. T. H. Boon.—p. 7.
*Vitamin E in Treatment of Muscular Dystrophies and Nervous Diseases. F. Bicknell.—p. 10.
Anemia of Pregnancy in India: Its Treatment with Cholesterol. Hermendra Nath Chatterjee.—p. 14.
Basal Metabolic Rate: Measurement of Production of Carbon Dioxide. A. E. B. Harding.—p. 17.
Streptococcic Infections in Mice Treated by Chemotherapy and Serum. L. Colebrook and W. R. Maxted.—p. 21.
Hodgkin's Disease. C. Baker and W. N. Mann.—p. 23.
Excretion of Sulfapyridine. G. V. James.—p. 25.
Suprarenal Cortical Extract in Acute Confusional States. H. Hoff and J. A. Shaby.—p. 27.
Coagulative Serum Prepared by Injecting Hirudin into Animals. O. Országh and J. Alföldy.—p. 28.

Diseases of Middle Lobe of Lung.—Punch shows that the more precise technic in radiography of the chest, including lateral and oblique views besides anteroposterior, together with the introduction of bronchography and tomography, has led to a greater degree of accuracy in the localization of pulmonary lesions. One of the many interesting facts that have emerged from these advances in diagnostic radiography is the frequency with which a variety of diseases can originate in and often be entirely confined to the middle lobe on the right side. The object of this communication is to describe instances of five different pathologic conditions affecting this region of the lung. Acute lobar pneumonia may originate in the right middle lobe and may

remain confined to it or subsequently spread to other lobes. The author reports a case in which the disease started in the middle lobe and later involved the whole of the right lung. Further he describes a case of bronchiectasis in the collapsed middle lobe. This case offers a good example of silent bronchiectasis; that is, bronchiectasis without sputum. This condition is easy to miss, for not only are there often no abnormal physical signs but also the straight roentgenogram may show little that is abnormal save perhaps slight increase in the linear striation in the region of the middle lobe. Most of the cases which the author has encountered have been detected by routine bronchograms taken in the investigation of cases of slight hemoptysis in which no evidence of tuberculosis could be found. The described case of massive collapse of the right middle lobe resulting from obstruction to the bronchus leading to it illustrates the extreme importance of bronchoscopy in all cases in which a bronchial carcinoma is suspected. The fourth case described concerns bronchial carcinoma. The author describes a case of interlobar effusion which demonstrates that a collection of fluid in the lesser fissure of the lung may cause an opacity in the region normally occupied by the right middle lobe. In the summary the author stresses that, owing to the anatomic position of the right middle lobe, especially when it is partially or completely collapsed, disease of it often produces few, if any, abnormal physical signs. The shadows produced in the straight roentgenograms, in both the anteroposterior and lateral views, by the pathologic conditions enumerated are often very similar in appearance. It is often only by further methods of examination, such as bronchography, bronchoscopy and exploratory puncture of the chest, that a differential diagnosis between them can be made.

Vitamin E in Muscular Dystrophies and Nervous Diseases.—Bicknell says that Einarson and Ringsted have suggested that the muscular dystrophies, amyotrophic lateral sclerosis and tabes dorsalis are due to a deficiency of vitamin E. Bicknell reviews experimental studies conducted by Ringsted, Einarson and others. It occurred to him that before beginning to use vitamin E for human diseases it is necessary to decide whether it could be insufficient in normal diets. Foods which should contain a small amount of vitamin E may well contain none by the time they are eaten. Moreover, of the foods which are rich in the vitamin, the most important, wheat germ, is to all intents and purposes never eaten. Green leaves, the other rich source of vitamin E, are eaten though never in large quantities by dried weight. It is not therefore unreasonable to consider that diets may in some cases be on the edge of a vitamin E deficiency: a deficiency which might become serious if for any reason absorption from the intestine was impaired or if the demands of the muscular and nervous systems were higher than normal, either from a hereditary disposition or from toxic influences, such as syphilis in tabes. Many obscure lesions of the muscular and nervous systems might be explained in this way. Tabes would be regarded as the result not of syphilis alone but also of a deficiency of vitamin E, causing degeneration of nerve tracts already weakened by syphilis. The muscular dystrophies and amyotrophic lateral sclerosis would be interpreted as the same deficiency disease having one form in children and another in adults. The author resorted to treatment with fresh dried whole wheat germ one half ounce twice daily in twenty-six cases: eighteen of muscular dystrophy, four of amyotrophic lateral sclerosis, two of tabes dorsalis, one of peroneal muscular atrophy and one of amyotonia congenita. In the group of the myopathies—chiefly children—the results of treatment with vitamin E were remarkable. Every patient except one improved who was treated for more than six weeks. Not enough patients with amyotrophic lateral sclerosis have been treated for the results to be definite, but on the whole the author thinks they are promising. The two cases of tabes were too advanced for the negative results to be of any value. The man with peroneal muscular atrophy has not been treated long enough for any conclusions to be drawn. The small girl with amyotonia congenita appeared to have been greatly improved. It appears reasonable to suggest that in all degenerations of the muscular or nervous systems, such as disseminated sclerosis, a large supply of vitamin E should be of value.

Archives des Maladies du Cœur, Paris

32: 945-1040 (Nov.-Dec.) 1939

Malignant Endocarditides of Right Heart. Dalous, Roques, J. Fabre, H. Pons.—p. 945.
*Electrocardiogram in Progressive Muscular Dystrophy. V. Puddu and A. Mussafia.—p. 958.
Triphasic Complex or Electrocardiogram with Four Positive Phases. E. de Somer.—p. 967.
Auricular Flutter in Nurslings with Congenital Cardiopathy: Two Cases. A. Calo.—p. 978.
Quantity of Circulating Water in Blood Plasma. J. Fliederbaum.—p. 995.
Influence of Digitalis on Relative Oxygen Debt in Latent Cardiac Insufficiency with Normal Cardiac Rhythm. G. Nylin.—p. 1010.

Electrocardiogram in Progressive Muscular Dystrophy.—Following a review of the literature on electrocardiographic studies in progressive muscular dystrophy, Puddu and Mussafia describe their studies in thirty-three cases. Twenty-nine presented the symptoms of the ordinary forms of progressive muscular dystrophy and four the symptoms of myelopathic dystrophy (Charcot-Marie). The disease was in different evolutive phases, from the most benign to the most grave. Only two of the thirty-three cases presented symptoms of cardiac disorders; an attack of tachycardia of a paroxysmal character occurred in one case and another one presented rheumatic cardiopathy with mitral stenosis. The authors made electrocardiographic records in all of the cases, often several times, with three peripheral and two thoracic leads. Summarizing the result of their electrocardiographic studies, they say that in thirty of the thirty-three cases the electrocardiograms were normal. One case presented rhythmic disturbances. Repeated electrocardiographic tests disclosed abnormal tracings indicating that this was a typical case of the syndrome of Wolff, Parkinson and White. Only after intense questioning did this patient recall short attacks of palpitation. One patient had an abnormal P wave. This patient had a history of rheumatism; he had a mitral stenosis and the electrical axis was deviated to the right. In one case the PR interval was prolonged. Clinically the heart was normal and the anamnesis was negative. Several aspects which were observed in this series or reported in the literature, such as an inversion of T_3 or a deep Q_3, are regarded as of no pathologic significance. The authors conclude that the electrocardiogram in muscular dystrophy can be altered in subjects who have signs or clinical symptoms of cardiopathy. In general it does not bring to light any new fact that can be attributed to latent or hidden cardiac lesions.

Bruxelles-Médical, Brussels

20: 361-395 (Jan. 14) 1940

*Influence of Intensity of Muscular Exertion on Diuresis, Albuminuria and Cylindruria. A. Govaerts and R. de Lanne.—p. 361.
Some Observations on Vaginal and Cervical p_H: Its Role and Variations. L. M. Pierra.—p. 370.

Muscular Exertion and Albuminuria.—Govaerts and de Lanne point out that albuminuria may appear after intense muscular exertion. Several theories have been advanced to explain this phenomenon. Hellebrandt and others have shown that the appearance of albumin in the urine after exertion is in harmony with the fall in differential pressure designated as the "negative phase," which is always observed after an exertion of a certain intensity. They explain that by a peripheral vasodilatation which is brought on by the exercise the renal circulation is reduced and the resulting renal anoxemia is incompatible with the normal functioning of the organ. Wamisch and Meyler, on the other hand, believe that modifications in the output and in the urinary p_H explain the albuminuria of effort. Govaerts and de Lanne decided to investigate these two theories. They made their studies on athletes. The exertion consisted of running. In the first experiment urine was obtained before and after a period of rest. During a second period of rest the runner ingested 200 cc. of water, and the arterial and differential pressures and the oscillometric index were determined. Immediately before the onset of the 2,760 meter run the bladder was again emptied. After the run the athlete rested and took another 200 cc. of water. The arterial pressure and the oscillometric index were determined repeatedly at short intervals. Every twenty minutes a new specimen of urine was collected. It was found that this

exertion did not cause albuminuria. In the second experiment, however, a longer distance was run (3,330 meters) and the total quantity of water taken was 500 cc. The negative phase of the differential pressure corresponded to the appearance of albuminuria. The variations in the p_H were insignificant during the first forty minutes, but after that the urine tended to become alkaline. There was a reduction in the diuresis and there were albuminuria and cylindruria. In the third experiment the exertion was of greater intensity but of shorter duration. Comparison of the results of the three experiments revealed that the diuresis tends to diminish as the intensity of the effort is increased, in spite of the ingestion of large quantities of liquid. Exertion of moderate intensity does not lead immediately to albuminuria, but intense exertions produce albuminuria. This albuminuria is of short duration, persisting for hardly more than an hour. It corresponds generally to a reduction of the urinary p_H and disappears as the p_H becomes alkaline. In the fourth and fifth tests the authors aimed to determine whether the albuminuria and cylindruria will appear if the decrease in p_H, which is induced by intense exertion, is prevented by the ingestion of alkalis. It was observed that the ingestion of 15 Gm. of sodium bicarbonate in fractionated doses prevented the appearance of albuminuria under conditions identical to those which had otherwise induced it. The authors conclude that the appearance of albuminuria in the course of muscular exertion is related to the intensity of the effort. The albuminuria thus induced is temporary, appearing only at the time of decrease in differential pressure. The early ingestion of an alkaline substance in a quantity sufficient to maintain the urinary p_H in an alkaline zone after the exertion reduces or even prevents the appearance of albuminuria.

Journal Belge d'Urologie, Brussels

12: 309-360 (Dec.) 1939

*Tumors of Kidney with Gastric or Intestinal Symptomatology. C. Perrier.—p. 309.
*How Can the Operative Sequels of Suprapubic Prostatectomy Be Shortened and Simplified? E. Jaeggy.—p. 317.
Three Cases of Operation of V. Richer: Analysis of Indications for this Operation. B. Fey.—p. 327.
Pathogenesis of Uncontrollable Hemorrhages of Prostatic Adenoma. Van den Branden.—p. 334.
Renal Lithiasis. F. Moyson.—p. 336.
Cystoscopy in Cancer of Uterine Cervix. Le Clerc-Dandoy and S. Simon.—p. 350.

Renal Tumors with Gastric or Intestinal Symptomatology.—Perrier directs attention to renal neoplasms in which the clinical picture is dominated by or made up exclusively of a digestive symptomatology. He first reports three cases presenting gastric symptoms. In the first case the gastric phenomena proved to be due to displacement and compression of the pylorus and the duodenum by a tumor of the left kidney. In the second and third cases the removal of a hypernephroma was followed by the disappearance of all gastric phenomena. In three other cases reported by the author, intestinal symptoms predominated. In these cases it was found that the renal tumor had caused displacement and compression of the colon and duodenum. The author emphasizes that pyelography in cases of this type makes possible a correct diagnosis.

Sequels After Suprapubic Prostatectomy.—Jaeggy shows that by appropriate measures the duration of the postoperative sequels after suprapubic prostatectomy is shortened, the postoperative care is simplified, and the prolonged duration of the hypogastric fistula and the danger of a hernia of the cicatrice are excluded. The following measures aid in arriving at this result: 1. The derivation of urine and blood through the perineum according to Fullerton. 2. The establishment of a partition constituted by the abdominal rectus muscles and their sheath, which is interposed between the cutaneous fold on the one hand and the bladder and its drainage tube on the other. 3. The evacuation of urine and blood, effected with the aid of a long tube (160 cm.) which enters the abdominal wall through a small incision in the linea alba (2 cm. below the umbilicus), advances behind the muscular partition, penetrates the bladder at its apex and emerges from it by traversing the prostatic capsule and the perineum. The wick used for tamponing the prostatic cavity emerges through the same perineal opening as does the tube. The author says that by thus prolonging the surgical operation by scarcely fifteen minutes and by reenforcing the aseptic measures it is possible to shorten the period of disablement by at least fifteen days.

Monatsschrift für Psychiatrie und Neurologie, Basel

102: 1-64 (No. 1) 1939

Psychogenic Delirium: Failure of Insulin Shock Therapy, Cure by Continued Sleep (Prolonged Narcosis). A. Favre and P. Danjou.—p. 1.
*Appearance of Hallucinatory-Cataleptic Anxiety Syndrome Attacks of Wakefulness and Similar Disturbances in Schizophrenic Patients. C. Rosenthal.—p. 11.
Problem of Brain Tumor and Cranial Trauma: Contribution to Pathogenesis of Cerebral Cysts in Simultaneous Formation of Tumor. I. Scheinker.—p. 39.
Two Cases of Menstrual Psychoses: Etiology and Therapy. H. Hoff and J. A. Shaby.—p. 58.

Attacks of Wakefulness in Schizophrenia.—Rosenthal shows that wakefulness and the hallucinatory-cataleptic anxiety syndrome are comparatively frequent in schizophrenia, for they were present in almost one fourth of an unselected material of seventy cases. They are of extrapsychic origin and are related to the sympathetic centers. They are not characteristic for schizophrenia but appear in the same manner in persons without physical or mental defects, particularly during the time of puberty and in connection with certain disturbances in the central nervous system such as true narcolepsy and certain forms of epidemic encephalitis, the sequels of which are characterized not only by parkinsonism but chiefly by endocrine and sympathetic disturbances. Their appearance in connection with schizophrenia, as far as it is possible to judge from previous observations, is due not to a particular form of schizophrenia but rather to the constitutional type of the patient; that is, they appear in psychasthenic persons with an unstable sympathetic nervous system. The fact that the hallucinatory-cataleptic anxiety syndrome and wakefulness appear in certain cases of schizophrenia suggests that schizophrenia occasionally has a special affinity for the autonomous centers of the mesencephalon, by which disturbances of the brain stem mechanisms can be brought about as by physiologic endocrine crises or certain forms of epidemic encephalitis.

Zeitschrift für Immunitätsforschung, Jena

97: 189-272 (Dec. 28) 1939

Activation of Virus of Chicken Pest by Erythrocytes. E. Weineck.—p. 189.
*Experimental Foundation and Immunologic Results of New Method of Treatment of Diphtheria: Diphtheric Serotoxoid Therapy. G. Ramon.—p. 194.
Serologic Antigen Analysis of Inoculation Tumors. W. Oswald.—p. 219.
Terminal Agglutination in Antileptospiral Serology. A. Bessemans, P. Wittebolle and R. Devuyst.—p. 238.
Method for Producing Purified Tuberculin. J. Vásárhelyi and B. Gözsy.—p. 255.
Chromatographic Adsorption of Purified Tuberculin. B. Gözsy and J. Vásárhelyi.—p. 265.

Serum-Toxoid Therapy of Diphtheria.—Ramon says that the idea to utilize the toxoids not only in the prevention but also in the treatment of toxi-infections was expressed in the first publications about these new antigens (1925). Of course the exclusive use of toxoid in the treatment of a disease developing as rapidly as diphtheria is out of the question. The immunity which is produced by diphtheric toxoid, to which it owes its efficacy in the prophylaxis of diphtheria, is established in a relatively slow manner and thus the diphtheric patient might succumb before he had derived benefit from the toxoid. Consequently the injection of antidiphtheric serum remains the primary and most pressing measure in the treatment of existing diphtheria. It furnishes the patient's organism with the antitoxin with which it can combat the invading intoxication. Nevertheless there is reason to inquire whether specific toxoid therapy combined with serotherapy is not capable of completing the effects of the latter. Although the antidiphtheric serum has produced remarkable results in the treatment, it has some limitations. The "passive" immunity produced by the serum is ephemeral, because the antitoxin furnished by it is rapidly eliminated. It is believed that this rapid loss of the antitoxin is at the source of the relapses which appear a short time after the initial lesion of diphtheria. In addition, the rapid disappearance of the antitoxin is not without influence on the severity of certain late manifestations of diphtheria. It has been sug-

gested that repeated injections of serum might prevent or lessen these manifestations. However, repeated injections of serum are not always inoffensive. Moreover, the passive immunity conferred by the serotherapy cannot protect the treated subjects against early or late recurrences. To remedy these different shortcomings of serotherapy it seemed advisable to combine serotherapy and the immunization by specific toxoid. A method of combining the two had to be found and the author takes up first the simultaneous injections of antidiphtheric serum and diphtheric toxoid and second the various mixtures of diphtheric antitoxin and toxoid. He reviews animal experiments with these two methods and then discusses the diphtheric serum-toxoid therapy in human subjects and the immunologic results obtained with it. In the technic evolved for human subjects, the patient is given first a subcutaneous injection of 0.1 cc. of concentrated diphtheric toxoid (containing 150 units per cubic centimeter), and after several moments (about twenty minutes) a subcutaneous injection of a single massive dose of antidiphtheric serum is administered. Two days later the patient is given another injection of toxoid (0.5 cc.), which in turn is followed at five day intervals by progressive doses of toxoid: 1 cc., 2 cc. and 3 cc. The author reviews cases in which this method was employed and describes tests on the immunity produced thereby. He concludes that the serum-toxoid therapy is capable of producing a continuity of passive immunity as the result of the antidiphtheric serum and of the active immunity which is produced by the toxoid.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

83: 5919-6010 (Dec. 23) 1939

Increased Intracranial Pressure. A. Gans.—p. 5920.
*Value of Periodic Examination of Adults Who Have Contact with Tuberculous Patients. W. A. Griep.—p. 5928.
Resistance of Gonococci in Vitro Toward Temperatures of 50 C., 45 C. and 41.5 C. P. J. van Putte.—p. 5934.
*Considerable Improvement of Sympathetic Ophthalmia by Use of Sulfapyridine and Injections of Liver Preparations. M. C. Colenbrander. —p. 5939.

Periodic Examination of Adult Tuberculous Contacts.—Griep points out that a considerable percentage of patients with pulmonary tuberculosis are not committed to a sanatorium because, when discovered, the disease has advanced to a stage at which treatment in a sanatorium no longer promises results. The cause of this late discovery of the disease is probably the fact that incipient tuberculosis causes few symptoms. Since tuberculosis is contagious, new cases should be searched for among persons coming in contact with tuberculous patients. To make this possible, all patients with tuberculosis should be registered. The author thinks that especially the members of the family should be kept under observation, but he cites cases indicating that extrafamilial contacts with tuberculous patients may likewise lead to infection. Periodic examination of persons who have contact with tuberculous patients has two advantages: 1. The early discovery of tuberculosis gives promise of a complete cure. 2. By reducing the number of sources of infection, the incidence of tuberculosis will be reduced. The author says that of the 103 patients with pulmonary tuberculosis observed at his institute in the course of one year, sixty-nine had been sent there by their physician, nine had come of their own accord and twenty-five had been discovered by control examinations. Comparison of the three groups with regard to positivity of the sputum and to the extensiveness of the pulmonary process reveals that the cases discovered as the result of control examinations showed a much more favorable condition than were the others. Moreover, the mortality rate was much lower in the group discovered by control examinations than in the other groups.

Sulfapyridine and Liver Extract in Sympathetic Ophthalmia.—Colenbrander reports a case of sympathetic ophthalmia in which he resorted to treatment with sulfapyridine and liver extract. The sulfapyridine was given by mouth and the liver extract by injection. The result of this treatment was surprisingly favorable. The visual acuity increased in a short time from 1/8 to 1/2 and later varied between 3/4 and 1; the signs of infection disappeared. The author admits that in cases of sympathetic ophthalmia favorable and unfavorable periods may alternate; however, the improvement which followed the administration of sulfapyridine and liver has so far persisted for eight months.

Acta Ophthalmologica, Copenhagen

17: 359-498 (No. 4) 1940. Partial Index

Concomitant Strabismus in French Equatorial Africa: Problem of Race and Strabismus. S. Holm.—p. 367.
Some Cases of Sympathetic Ophthalmia. J. P. Jensen.—p. 388.
Granulocytopenia with Ocular Lesion: Case. A. Löwegren.—p. 412.
Influence of Odors on Color Vision. S. V. Kravkov.—p. 426.
*Cataracta Electrica Following Electric Shock. H. Skydsgaard.—p. 460.
*Treatment of Gonorrheal Conjunctivitis by Means of Sulfapyridine. R. Sysi.—p. 466.
Bone Metaplasia in Eye. S. Wegener-Thomsen.—p. 482.

Electrical Cataract Following Electrical Trauma.—Skydsgaard thinks that, of eye injuries resulting from electrical trauma in persons struck by lightning or in those who work with high tension currents, one of the most important is the delayed cataract which occasionally appears. He reports the history of a man aged 44 who was employed on high tension work and who, about a year and a half ago, received an electric shock (6,000 volts). He lost consciousness and when brought to the hospital he was found to have extensive burns on the left hand and wrist and on the right arm. There were also burns on the left side of the face and on the nose. During the first half year after the accident the patient noticed nothing wrong with his eyes, but after that there was a gradually increasing loss of vision in the right eye and a cataract was discovered. The anterior surface of the lens had a cataractous opacity of somewhat irregular polygonal form, measuring about 1.5 by 1.5 mm. Slit lamp examination showed that the opacity was localized in the anterior capsule and the outermost subcapsular parts of the lens. The opacity projected slightly above the level of the remainder of the lens capsule; the shagreen pattern of the other parts of the anterior surface of the lens was normal. In addition to the cataractous part there was seen in the remainder of the most anterior part of the lens capsule a network of fine, linear, cataractous opacities, resembling cotton fibers, their arrangement having no relation to the lenticular structure. In the interstices there were fine, punctate opacities. Ophthalmoscopy revealed a normal fundus and the tension was normal. The field of vision was normal for hand movements. The left eye was healthy in all respects. The author is convinced that this cataract was caused by the electrical trauma. He says that electrical cataracts often present only features that are common to a large group of cataracts. He stresses that the electrical cataract appears late and that it may be either unilateral or bilateral. Contrary to the opinions of some investigators, he maintains that electrical lesions in the proximity of the eye are not an essential condition for the development of the cataract. The strength of the current does not appear to be of decisive importance in the production of cataract. A tension of 500 volts may result in mature cataract, while tensions even up to 80,000 volts have been known to produce only partial cataract. It is probable that in this respect considerable importance attaches to the duration of the passage of the current. The cataract may be regarded as due (1) to the mechanical effects of the electric current or the lightning on the lens or on its suspensory ligaments, or to calorific or chemical (electrolytic) changes resulting in the destruction of the epithelium of the lens capsule or (2) to impairment of the nourishment of the lens owing to inflammation produced in the ciliary body and in the iris. Finally, (3) the aqueous may be altered by the electrolytic effect of the current. None of these theories alone would appear to suffice for the explanation of all cases, whereas a combination of them provides a plausible explanation.

Sulfapyridine in Gonorrheal Conjunctivitis.—Sysi reports eleven cases of gonorrheal conjunctivitis in which he used sulfapyridine. In the first five, in addition to the oral administration of sulfapyridine, local applications of silver nitrate and of mild protein silver were given. In the other cases the local treatment consisted only in irrigations with physiologic solution of sodium chloride, but the improvement was the same in all cases. The sulfapyridine was given in the large doses that are customary in lobar pneumonia. In two cases, nausea and cyanosis appeared but subsided rapidly after the medication was discontinued. Although in the reported cases the local treatment was made superfluous by the sulfapyridine medication, the author admits that the material is too small to decide whether sulfapyridine will always do this.

THE STUDENT SECTION

of the

Journal of the American Medical Association

Devoted to the Educational Interests and Welfare of Medical Students, Interns and Residents in Hospitals

SATURDAY, MARCH, 23, 1940

Some Criteria on the Selection of Medical Students

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CHICAGO

In any community the medical profession is no better than a cross section of its members. It may be granted that our schools have been offering, for the past twenty years at least, reasonably good training. As some institution has graduated every physician now in practice, the responsibility for standards of service is theirs. If weaknesses are apparent we may look not at the product but at the raw material which they have attempted to fabricate. While a college career cannot alter the inherent traits or the embryonal genes of any man or woman, nevertheless the influence of the classroom in the building of ideals may be substantial. Students come to us, for the most part, neither wise nor deeply learned. It is our job to see that they are no worse off when they leave. Today medicine is puzzled, even bewildered, not because our technics have not advanced but because public appreciation of our efforts has dropped, at least in some quarters.

It has been stated that the members of our group are now accorded less respect and less understanding than at any time certainly in the past two generations. Can it be that the faculties of medicine are failing to employ every procedure likely to strengthen character, to mold a generation of influential citizens? While we may question the accuracy of some of these assertions it can do no harm to indulge in a moderate amount of introspection.

In 1910 the Flexner report—the most powerful and stimulating educational document ever published—forced medical schools to increase requirements, seek university affiliations and improve both laboratory and clinical teaching. Standards and curriculum loads have risen consistently, until in 1940 our undergraduates are obliged to work harder and to know much more. The length of the course has practically doubled, even though we do not include the years necessary to qualify for one of the specialty boards. All this in three decades!

Academically minded young men and women are attracted to our halls. The more difficult it is to gain admission to a reputable institution, the greater the demand appears to be. But in stressing the technical phases of schooling have we not deprived our students of many intangibles, certain points of view, that should be numbered among the attributes of a good doctor? As Oliver Wendell Holmes once remarked, "Science is a first rate piece of furniture for a man's upper chamber, if he has common sense on the ground floor." It is a veritable truism that the medical man who is all cold crystalline science is like a body without soul. We may say further that there is no place in the healing art for sharpness, shrewdness or those tricks of trade which may make for success (with but few, let us hope) in the commercial world. How can we be sure that we are not swinging the figurative p_H too far to the acid side, curdling, as it were, the milk of human kindness?

Assured by his college record that the candidate is intelligent, we should ask Is he industrious? A lazy man possessed of brains is dangerous. Emphasis thereafter may be placed on mental stability and on character. Each is a birthright. Neither can be fortified, except in minor degree, by years of tutelage, although both are susceptible to some weakening. Does the student possess what is termed fundamental honesty and integrity? If he lacks sound moral worth, the effort expended on him will be worse than wasted. We may be guilty of endorsing with a diploma a menace to society.

The desire to "get by" which has permeated daily affairs has filtered all too deeply into education. The motivating force, get all you can but give as little as possible, is unsound in principle and false in concept.

It is a matter of common knowledge that in certain quarters at least the public is coming to look on the physician with some question. By bitter experience some have learned that a given medical man is not entitled to the confidence that his calling should guarantee. Is it true

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that instances of this sort are increasing? More than any other the medical adviser must personify honor, steadfastness and truth, for every sick individual is a trust that cannot be betrayed. About all that the unprincipled lawyer can do is to steal money. His counterpart in medicine, however, may filch life.

REQUISITES FOR MEDICAL STUDENTS

I would place character, then, first among those ancillary yet fundamental considerations for admission, and there are many ways to measure this vital endowment. Heredity may be studied with profit. By means of personal interviews, using interested alumni and other available sources including upper classmen from the same school or vicinity, the candidate's background can be envisioned with accuracy. Then too the lad's reactions toward his fellow students in prep school and college and his talents for leadership will afford many hints. Inquire closely into his motives for entering medicine. What are the actuating and directing forces? The suggestion that he submit a 500 word biography may be helpful.

Next in importance is an intense humanity which must be ingrained—second nature. The unfeeling, indifferent expert possessed of every refinement of skill rates about 10 per cent of par as a counselor when some member of the family is ill. For most of us sickness is an emotional experience, and as a rule we are unable to dissociate real interest and effective performance. Not long ago on a visit to a hamlet of a few thousand population I was cheered immeasurably by remarks which I heard on every hand to the effect that "Dr. Blank is the most valuable and outstanding citizen of our community." This prompts the rather bold assertion that the health of every locality would be enhanced by the presence of a generous hearted doctor. He may not know quite as much as his city colleagues the specialists, but he is faithful in guarding the welfare of his patients; his attention to their ills is so unremitting that disaster comes but rarely. Furthermore, he is the first to call for help when the occasion arises. We cannot read without a thrill Ian Maclaren's story of old Dr. MacLure of Drumtochty, who brought the great London surgeon to save the life of Annie Mitchell. What a noble physician John Keats would have made had not tuberculosis cut him off on the threshold of life and had his urge for medicine held through the years. Deeply imbued with an enduring affection for his fellow man, the author of the Eve of St. Agnes and the Ode to a Nightingale would have rendered a priceless service. But, some one may say, "Of what use is a nightingale anyway? It would never take a prize at a poultry show!" Therein lies the crux of the whole matter. We must seek and admit to our classes only those students who are capable of understanding and appreciating the doubts and fears that beset the sick.

Next I would suggest that the applicant shall be possessed of certain cultural instincts. Only the necromancy of a chemical laboratory can transform a sow's ear into a silk purse. Our classrooms as yet are not adept at working miracles. However, the habit of reading good books plus an acquaintance with the world's literature, art and music does something to a man that makes him a better physician. Our demand for a broad intellectual outlook requires that our teachers shall live up to and exemplify the best traditions of scholarship. We lost much with the passing of the old time lecturer whose discourse was a model of diction, glowing with imagery. He had the power to illumine an otherwise dry subject with interest and color.

In addition to good mental pabulum our neophyte must possess the ability to think logically. After all, diagnosis is little more than a practical exercise in logic. It is the lack of this accomplishment that leads to scatterbrained incompetence, so destructive to lay confidence. Some possess it; others do not. It is our business to select those who do. A brief undergraduate course in this subject would be of value.

PERSONALITY REFLECTS THE MAN

Personality more often than not reflects the man and in his smile and demeanor we read his thoughts. Charlatans may cultivate the form but not the substance. Too much satire has been directed toward "a good bedside manner." It was Du Maurier's cartoon in *Punch* of March 15, 1884, that first called forth this phrase. The legend read "What sort of a doctor is he?" The reply was "Well, I don't know much about his ability; but he's got a very good bedside manner." The attributes of a gentleman reflect themselves in conduct and we all agree that there is no excuse for the occasional blunt, even brutal, approach to those who are in pain. Our candidate must be blessed with those traits of heart and mind which will lead his patients to the certain knowledge that he is personally concerned and that he will leave no stone unturned for their recovery.

In selecting our quality quota we must envision the market. What is the objective of medical training. Is it for service in pure science, research and investigation? Is it for medical practice, general or special? Certainly the assumption is sound that it is for all of these, and perhaps more, including the broader aspects of civic affairs in which a large majority of our colleagues should participate. At most, a small percentage of all who enter as freshmen will devote themselves solely to investigation, to the exclusion of contact with patients. By far the larger number will engage in practice, alert to new discoveries. From the vast

panorama of clinical material which comes within their purview there will emerge in the future, as in the past, useful and far reaching observations. A goodly proportion will carry into the field the habits of the laboratory.

QUALITIES OF GOOD PRACTITIONERS

As a profession we have accepted the obligation of caring for the sick. It can be neither shifted nor delegated to less competent hands. That it has been so shunted, all too generously, we are well aware. The birth of the healing cults is an admission of our failure. No, the level of our profession can rise no higher than its source, the grist out of which doctors are made. If we would preserve our historic ideals, the apotheosis of examination grades only must give way to the consideration of all those qualities that have typified good physicians in all lands in all times. We have been fixing our gaze on marks and little else, ignoring those transcendent traits which have held physicians high in public esteem. Many of us have long since got over the notion that the mere completion of courses guarantees desirable students. Our admission committees, then, must read between the lines; they must search the background of the prospect and say to themselves "Will this candidate become an honest doctor, devoted to his people?" There need be no letdown, not one whit, in our standards of scholastic accomplishment, but let us beware of the "smart" type, so likely to possess a mirror memory but lacking in moral fiber. Most of us have great admiration for and faith in young people. They are not, as has been alleged so often, developing into manhood and womanhood without aims and worthy objectives. Medicine needs them, but only those whose sincerity of purpose rises above selfishness and greed.

Furthermore, I would not have them all cut from the same educational fabric. The very diversity of pathways to the medical field serves as a homogenizing instrumentality in the student body. We have all seen diffident, even self-centered, bookwormish lads, sound at heart, develop into leaders; and in this connection we must not minimize the influence of the students, one on another. Not infrequently the remark is passed that a certain physician would have made a great lawyer, financier or industrialist. The healing art needs all talents—a composite of intellectual power.

MERITED PUBLIC CONFIDENCE

Built as it is on many branches of science, using every atom of knowledge that can be garnered, the only hope that medicine has for permanence lies in well merited public confidence. Otherwise we may become mechanics, record clerks and laboratory technicians with the punch card system disgorging the diagnosis and indicating treatment. In this connection we may call to mind the remark attributed to Madame de Staël, "Napoleon is not a man but a system." If our plan of selecting medical students is weak, if because of shortsightedness we are drifting into a "system," we may well counsel as to the remedy lest we find ourselves in ruins amid our own good intentions.

Yes we must demand of those who aspire to follow in the footsteps of the great leaders of medical thought character, fidelity to duty and an unsurpassed devotion to the public weal. In this city, scarcely past the century mark in years, many of our citizens today recall the notable accomplishments of N. S. Davis, John Evans, Edmund Andrews, Christian Fenger, Nicholas Senn, John B. Murphy and scores of other distinguished men.

Edmund Andrews founded our Academy of Science, wrote widely on the geology of the Great Lakes and was the first to point the way to the use of oxygen and nitrous oxide as an anesthetic.

John Evans led in establishing two universities and his name is enshrined in the city of Evanston, Ill., and Mount Evans in Colorado.

Christian Fenger and Nicholas Senn are remembered daily by thousands of high school students who attend classes in massive structures bearing their names.

Nathan Smith Davis, father of the American Medical Association and first editor of THE JOURNAL, established a hospital and a medical school (which still survive) and his name lives in the annals of this, his adopted, city for untold good works.

Judged by the standards personified in these stalwarts and hundreds of others, the query comes Have we held our own in the affairs of our several communities? Perhaps our institutions, eager for scientific discoveries and for the outpouring of papers, have forgotten to stress those worthwhile qualities which, after all, are responsible in large part for the contributions of medicine to better and more healthful living. It is the job of our schools to guard their portals valiantly against those who are unworthy. Only then shall we be able to live up to the high estimate of Robert Louis Stevenson, who termed the physician "the flower of our civilization."

301 East Chicago Avenue.

Laws Bearing on Medical Practice

No physician is equipped to practice medicine unless he has had certain instruction relative to laws determining licensure, the practice and the legal obligations of the physician himself, sanitary codes of state and governmental regulations pertaining thereto, information concerning birth and death certificates, relation to the coroner and other simple items of detailed information seldom acquired. He should also know something of the broad system of laws, regulations and legislation affecting the entire population with their bearing on his medical practice.—Black, B. W.: Community Aspects of Medicine, *J. A. Am. M. Coll.* **13**:19 (Jan.) 1938.

Comments and Reviews

MEDICAL LITERATURE

Abstract of the Lloyd Roberts lecture, delivered by Sir Robert Hutchison before the Medical Society of London and published in the Lancet Nov. 18, 1939.

The amount of writings of a profession is a measure of its vitality and activity, while their quality is a rough indication of its intellectual state. Medical literature is the currency by which a man contributes to or borrows from the common stock of knowledge and experience, and the volume of this currency and the character of its metal are of the greatest importance.

In surveying medical literature, the first thing that impresses one is its bulk. Professor Bulloch, who has given great attention to this subject, estimates that there are more than 5,000 medical periodicals of one sort or another in the world; others have put the number as high as 7,000. In this country, and we are more modest in output than many of our neighbors, there are about 130. The yearly crop of medical books in Great Britain amounts to more than 400. To quote Professor Bulloch again, on an average two articles on tuberculosis alone have been published every day for the last forty years. This gives one some idea of the immense fecundity of the medical press. This enormous proliferation is both a nuisance and a danger. The mere question of storage is a problem. In the library of the Royal Society of Medicine, room has to be found for 3,000 additional volumes each year, and these take up 60 feet of shelving 8 feet high. In a private house it is impossible to find room even for bound volumes of the weekly journals. The consequence is that tons of medical journals must be thrown into the dustbins every week. More serious is the effect on the purpose for which medical literature exists—the recording and interchange of knowledge. It is becoming increasingly difficult to find the needle in the haystack, the few grains in the heap of chaff. Facts may be said to be buried rather than recorded, and the fruits of the labors of our predecessors are apt to be lost. More and more, too, is it difficult for the workers in one field to keep in touch with what is being done in other fields.

HOW TO COPE WITH IT

Must we sit still and see science suffocated in its own secretions or can we do anything to mitigate the evil? How can we make the best use of medical literature without being overwhelmed by it? Current medical literature cannot be permanently ignored. Osler said "A doctor who does not use books and journals, who does not need a library, who does not read one or more of the best weeklies and monthlies, sinks to the level of the cross-counter prescriber, and not alone in practice, but in those mercenary feelings and habits which characterize a trade."

All a busy practitioner can do is to tear out from his weekly journal those articles which interest him and which have a direct bearing on his work, and file them. In this way he will build up a collection to which, if it is properly indexed, he can refer as need arises.

For the contributor to medical literature, however, this is not enough. He needs a directory to help him find the publications relevant to his own work—and fortunately we have in the *Quarterly Cumulative Index Medicus* an excellent guide of this sort, to the producers of which medical writers can never be sufficiently grateful.

"GETTING UP THE LITERATURE"

But when the required articles have been found they have still to be read and abstracted. This is laborious business which requires nowadays a knowledge of foreign languages. More and more there is a tendency, which seems to have originated in America, to have bibliographies prepared and abstracts made by professional librarians. I view this labor saving device with no great favor. It seems best for each writer to do his own quarrying, for the librarian, however skilled in his own business, has had no medical training and cannot be expected to know the relative value of different papers or the points in any which should be picked out. He has therefore perforce to confine himself to a transcription of the summary of the paper, if a summary is given; but for the conscientious original writer a summary is not enough. The only excuse, indeed, for this way of "getting up the literature" is when the paper is written in some outlandish language, with which a librarian may have at least a working acquaintance, or when the student lives at a distance from any large medical library. In such a case, however, it is possible to send a photostat copy of any article required and that is far better than a mere abstract made by some one else. The ideal would be an international clearing house in which the whole periodical medical literature of the world would be sifted by experts and summaries made of such papers as contained any original as opposed to merely repetitive or didactic matter, the summaries being published in English,

French and German. In this way the pith of all current medical literature would be extracted and presented in readable form; but it is feared that such a plan is visionary.

What prompts doctors to write? Why, as Dr. Johnson wondered of literature in general, have so many people written "who might have let it alone?" The motives for medical writing are mixed. Good reasons are the necessity for putting on record new observations or results of experiments and the impulse to teach. Bad reasons are the desire for prestige and priority (of which the "preliminary note" is a familiar example) or the itch for advertisement. It is easy to be too censorious in this matter of alleged self advertisement, for after all the only way in which a young man can let it be generally known by his colleagues that he possesses special knowledge or skill in any department of work is by contributions to the professional journals. Writing from such motives is legitimate enough. But one must draw the line at the publication of the same paper in more than one journal and at the equally reprehensible practice of sending out reprints wholesale.

These motives being apparently so compelling, there is no need to add inducements to write. Among the uncalled for inducements I would include ceremonial orations, presidential addresses and in particular memorial lectures (such as this). The last have multiplied to such an extent as to have become a nuisance, and it is increasingly difficult to find people to give them or to collect audiences to listen to them. There are surely better ways of remembering the dead than by boring the living.

HOW TO CONTROL THE OUTPUT

In the first place there should be strict birth control with regard to new journals, there being too many already. Secondly, amalgamation of existing journals might be carried out in many cases. It is absurd, to take an example, that there should be two journals in this country devoted to diseases of children. Thirdly, some journals might be suppressed altogether. What we should aim at is to have the stream of publications gathered into as few channels as possible. Superfluous journals lead to superfluous writing, for their editors are sometimes driven to tout for contributions; instead of the editor having to woo the writer, it should be the writer who has to persuade the editor to find room for his article.

The chief means to check the flow of superfluous writing must be stricter editing. This would involve the refusal of many articles which find their way into print; but that need cause no regrets. Any one who has to read large numbers of articles with a view to abstracting from them anything of value must be convinced of this. I found when doing such work for the *Medical Annual* that not more than a fifth of the articles sent to me were worth anything—the rest went into the waste basket.

Closely involved with the refusal of articles is the question of payment to writers. If a journal has any right to exist, there should be competition to get into it; I have been told by a professor in Germany that one reason for the many superfluous medical journals in that country is that they pay their contributors. Further, the articles which are accepted should be more drastically dealt with. We want more of the severe editing which Langley used to apply in the *Journal of Physiology* when he controlled it. Most articles are too long. "Was there ever anything written by mere man" (If I may again quote Dr. Johnson) "that was wished longer by its readers excepting Don Quixote, Robinson Crusoe and the Pilgrim's Progress?" And some readers would not except these. The capacity of the average person for sustained attention is exaggerated, and in every sphere there is need to practice the art of leaving off. Powerful astringents may be required to check the verbal diarrhea which afflicts many writers, but it is the business of the editor to administer them. Meanwhile every paper should have a summary appended.

WHY SO MANY BOOKS?

The average doctor is not much of a book buyer, and, considering how quickly medical books become out of date, one cannot blame him; the only best sellers in medical literature are textbooks which most students use for examinations or a few books which have a direct bearing on practice, such as works on therapeutics. Why are so many books written? The publishers, I think, are largely to blame. In their rivalry with competitors they persuade young would-be authors to write for them. The writer is flattered and argues that, whereas he may get some advantage out of writing the book, he can lose nothing; the publisher, on the other hand, recoups himself for his many failures at the expense of the more successful authors. It would be a great gain if, instead of issuing elaborate textbooks, publishers would provide us with more concise, fully documented monographs giving a complete account of present knowledge in a limited field and produced as cheaply as possible.

DULNESS OF MEDICAL LITERATURE

In considering the quality of medical literature, one has to distinguish between content and form. As regards content, one is struck with the excess of facts and the comparative

absence of ideas, generalizations and hypotheses; there is, in short, too much observation and too little reflection. Much of medical literature is like a heap of bricks without any mortar to hold them together. The power of wide generalization is rare, but medical writers might at least show greater imagination. The lack of this has the consequence that much medical literature is dull although the subject matter is interesting; for instance, the biography of a red blood corpuscle from its birth in the bone marrow, with its capillary wanderings and its moving adventures by flood and field to its normal gradual old age and burial in the spleen or to its tragic end in a hemorrhage. It might be made a vivid Odyssey, but how dull it sounds in a textbook of physiology. Medical writers are afraid of romance; they fight shy of humor. And yet it is probably true that a writer has never really mastered his material until he can jest about it; until then it has mastered him.

MANUFACTURED WORDS

Medical publications perhaps should not be literature, if one means by that "writings esteemed for beauty of form or emotional effect." Brevity, lucidity and reasonable observation of the rules of syntax are all that can be expected; the purple patch is out of place. But these simple demands are often not met. Lucidity is to some extent an outcome of the language a writer uses. It is difficult to be obscure in French and easy in German, while in the case of English all depends on how it is written, the man being more important than the medium. In all languages, however, it is probably true that clear thinking and clear writing go together.

It is an unfortunate result of the increasing specialization of knowledge that the writings in one department are often hardly understood by those outside it. I confess that many papers on medical psychology, biochemistry or iatromathematical subjects might, so far as I am concerned, as well be written in Chinese. Much of this obscurity is due to the use of jargon, but some of it is unavoidable. Such neologisms usually should be coined from Greek or Latin roots, but today there is a tendency to use new words of home manufacture. Many of the new Germanisms are of this class. Such terminologic self sufficiency is most certainly to be regretted.

ABSENCE OF LITERARY FORM

Medical literature exhibits too often an absence of style or even of grammar. The average of medical writing is probably not so high now as it was during the last century. We have no textbooks like those produced by Michael Foster, Fagge or Osler, and the multiple productions which have succeeded them have lost the individual touch.

Slovenly writing often is the result of haste or carelessness. To a large extent, however, the root of the evil lies deeper and is a consequence of defective literary and linguistic education. The great models of English prose are probably less read by the younger generation, and a literary diet of newspapers, detective novels and the productions of scenario writers is no substitute for them.

THE PREVENTIVE AND INVESTIGATIVE ATTITUDES IN THE PRACTICE OF MEDICINE

Abridgment of address by Dr Henry J. Gerstenberger, given at the Commencement at Western Reserve University School of Medicine, Cleveland, June 14, 1939.

Prevention and investigation are the great ideas in medicine, the sensible application of which by you as physicians in practice will do most to make you fine physicians.

You must consider it your duty to discuss and, if necessary, to agitate with your families the need and advantages of applying preventive medicine in the home. The public is ready today to listen to earnest approaches in this direction. Let me enumerate some of the immediate objectives of such a plan, from the standpoint of the welfare of the mother and young child:

1. See to it that men and women, before they marry, are examined for syphilis, tuberculosis, hereditary tendencies to epilepsy, mental disabilities, blood dyscrasias and severe constitutional abnormalities.

2. To see that the pregnant mother is regularly examined to lessen the chances for the development of toxemia and that she has a diet to meet the added needs of the fetus, in order that nature need not call unduly on her body to safeguard the offspring; only when the diet of a mother is wofully incomplete and her own body stocks near depletion does the fetal organism begin to suffer.

3. To see that the infant is born at term and that he receives, as he nearly always can, his own mother's milk for a period of at least six months.

4. To see that the infant, before he is a year old, is vaccinated against smallpox and immunized against diphtheria and later against all other contagious diseases as soon as one can be certain that effective methods of protection are at hand.

5. To see that the infant's body and mind and its emotions are properly stimulated and trained by the mother and not by the maid.

6. To see that the infant gets his share of fresh air and sunlight, and when the latter in the darker half of the year becomes inadequate, that he if possible receive the advantages of its ideal alternative, artificial sunlight, or the next best substitute, cod liver oil, which in addition to the antirachitic factor supplies him with fat soluble vitamin A, iodine, iron and various fatty acids.

7. To see that when the infant is weaned he receives milk free from pathogenic germs and in addition fruit, vegetables, cereals and liver and, in due time, other meats and eggs to meet his needs for calories and for the essential food constituents, of which many are quite as important as are the much discussed vitamins and calcium; and to do this without getting the mother and the father befuddled about balancing the diet. Rather attempt to aid the parents balance the budget by urging them to feed the old fashioned cereals instead of the modern types proclaimed with bombast through the air and to get the vitamins from the grocery store in their natural state rather than in synthetic form from the drug store.

8. To see that parents have the proper kind of thermometer and that they use it immediately when the infant seems ill and call you if any degree of fever is found in order that you may at the earliest opportunity search the child from head to foot for its cause and begin to combat it.

9. To see that parents realize when the infant begins to toddle that he of necessity will come into contact with a variety of infectious agents and therefore off and on will have to battle with them.

10. To see that the child has the benefit of your knowledge of the constitutional peculiarities of its parents and relatives and that you search for indications of their existence in the patient; that you continue to aid the mother not only in keeping the child's body healthy but in training his mind and emotions.

THE INVESTIGATIVE ATTITUDE

The second attitude which I consider important in the practice of medicine is the investigative attitude. This is a combination of skepticism and inquisitiveness which takes nothing for granted and is anxious to know the reasons why the conditions found are not as they should be or why the treatment does not accomplish what was intended, and what course to pursue to obtain the desired result. Only when a physician constantly keeps in this frame of mind can he best diagnose, treat and prognosticate his patient's illness; when he, day in and day out, proceeds in this manner, he will become better and more skilful and may even come upon a fundamental truth that will benefit all mankind. He even may uncover truths, as Robert Koch did while he was still a general practitioner and medicolegal officer in a small German town.

I have just finished reading the first volume of the fascinating work by Bruno Heymann on the life of Koch and would commend it to you as a source of inspiration and incentive. Koch came from a simple, large family such as one could frequently find in northern Ohio fifty or more years ago; many children, an able, active father, a fine mother, a good income, but barely adequate to meet the needs of a large family trying to educate its children. Robert Koch, with an excellent record at the university, preferred to go into practice in a village. Koch's motto, which as a medical student he wrote at the bottom of his prize essay, was "Nunquam otiosus," meaning "Never idle." Later, to his assistants when they were in despair over the progress of their work, his advice was "Nicht locker lassen!" (Don't let go!)

After three years of work, which proved to him that the organisms in his possession were the cause of anthrax, he wrote to Prof. Ferdinand Cohn at Breslau asking whether he would pass judgment on his work before he proceeded with publication. The reply was favorable, and in order to be in Breslau at the hour stated he left Woolstein at 1 o'clock in the morning by mail coach to reach after two hours a station of the railroad which would take him to Breslau. On arrival he proceeded to the institute with apparatus, dishes, reagents, rabbits, mice, frogs and microscope. The demonstrations lasted two days and were attended by the luminaries of the university, among whom were Weigert and Cohnheim. Weigert was performing a necropsy when Cohnheim went to see what Koch had to offer and when he returned he said to Weigert "Now drop everything and go directly to Koch; this man has made a great discovery with a method which is both simple and exact and for which he deserves all the more praise as he is entirely cut off from connections with scientific bodies and as he has brought this all out by himself in an absolutely finished form. There is nothing more to do. I consider this to be the greatest discovery in the field of microorganisms and believe that Koch some day will surprise us with further discoveries." It is wonderful to realize that another Koch can come out of general practice, and he might be one of you! Stephen Paget wrote in his Confessio Medici: "The natural dignity of our work, its unembarrassed kindness, its insight into life, its hold on science—for these privileges, and for all that they bring with them, up and up, high over the top of the tree, the very heavens open, preaching thankfulness."

The Medical Book of the Month

THE STUDY OF ANATOMY

Whitnall has published a small book[1] intended for the use of medical students at the time of dissecting. The author emphasizes the importance of keeping in mind the living body and its relation to future clinical work. The dissection of cadavers is only one way of studying anatomy. The student should realize that man is his subject. The dead body is an imperfect means to establish the essential foundations on which the practice of medicine is based. It is obvious that anatomic structure in every part of the body has been designed and especially molded in response to a definite physiologic purpose. Form is determined by function. When dissecting, the student should constantly ask himself why this structure is so shaped and what it does, for his future interpretation of symptoms and his clinical diagnosis and treatment will be based on that very knowledge.

THE MOST VERSATILE SENSE ORGAN

The skin, which is wonderfully adapted to many purposes, will illustrate this method of study. The skin prevents the escape of body fluids. Its thickness varies in different parts of the body. It is freely movable in some places and tight in others, and the creases mark where it is bound down. It has minute ridges which improve the grip on the palm and sole and marvelously afford the only permanent and absolute means of personal identification with finger prints. With all our modern ingenuity in creating machinery and fabrics, we cannot create a tough yet highly elastic one that will withstand heat and cold, wet and drought, microbes and the wear and tear through the years and yet make its own repairs and even assemble in summer a protective pigment against the sun's rays. The very skin which you dissect is a regulator of body temperature, an excretory organ, and the largest and most versatile of our sense organs. The skin helps to form the ear drum, it covers the eye ball, from it originate the teeth, and in it are millions of tiny glands. Finally, when sunlight or ultraviolet is shed on it, the ergosterol in the skin produces vitamin D.

Whitnall's first lesson in anatomy, therefore, is before you start dissection, to set the living model before you, observe the sheen of health in the skin, its color, goose flesh or perspiration, the veins beneath it; then complete this study by examination of microscopic slides of its structure and glands, considering such minor features as may be present in the form of moles, corns, birth marks, blisters, freckles and wens.

1. Whitnall, S. E.: The Study of Anatomy, Baltimore, Williams & Wilkins Company, 1939; price $1.75.

MARVELOUS ARCHITECTURAL DESIGN

Likewise study the bones. They are not dead but actual living and gradually changing tissue. Every ridge and fossa and groove tells a definite functional story, as does their marvelous histologic architectural design. Furthermore, the bones hold a reserve of calcium phosphate and in their marrow they manufacture red blood corpuscles.

This fundamental principle that anatomic structure is determined by physiologic function is of universal application. The function shapes the form. The student should keep in mind in dissecting the dead that it is only a means of understanding the living. He must realize how different the tissues he dissects are from living tissues and how they will appear when he comes to see them in surgical operations, when everything will be mobile, elastic, fluid; arteries will pulsate and spurt when cut; veins will flow instead of collapsing, some lymphatics will be identifiable, muscles will be tractable; the peritoneum and pleura will be moist, glistening, active membranes; even the nerves will present a different appearance. He should think, therefore, of the living color and contour, remembering that cadavers are usually bodies of the aged who have died of disease and that perfect material cannot be expected in the dissecting room.

MICROSCOPIC ANATOMY

Now to correlate function with the gross anatomy, let us consider the microscopic anatomy. The mere difference in magnification is no excuse for relegating the fundamental details of the structure of organs to the secondary position in the student's studies which histology holds. To bridge the gap between the histologic slide and the dissecting knife the student can make frequent use in the dissecting room of the low-powered hand lens. To study the cut surfaces of organs, muscles, tendons, nerves and enlarged appearance of the intestinal villi the student will find an ever widening field of usefulness for the hand lens and yet he will see that the minute structure of organs as complex as the liver or the blood and the retina and the nerves cannot properly be understood without special preparation and examination under the microscope. It will be difficult to base the fundamental knowledge of the microscopic structure of organs on extremely thin, artificially colored and chemically treated pieces of them. He will have to translate a flat two dimensional picture into a solid three dimensional conception of the tissue as it actually exists. He must realize that the microscopic section also may

be only one phase, like a snap shot as it were, of an ever changing design in the tissue he is studying, which varies with its functional activity and with age.

THINK EMBRYOLOGICALLY

To understand how the body has developed from the ovum to its adult form is as essential to the study of anatomy as to know the factors that govern the expansion of the community in which one lives. Indeed the human body is a community of cells which have gone through a specialization of labor comparable to the evolution of society from primitive man to urban life. In such a comparison the bones represent the engineers and builders; the cells of the alimentary tract may be compared to the cooks, waiters, dustmen and purveyors; the vascular system corresponds to the network of highways and streets, which throng with carriers of food, removers of waste products and special servants like policemen and detectives. The nervous system is comparable to a telephone exchange, forming a means of communication with the outer world; but especially to be admired in the healthy body is the perfectly balanced cooperation of all its systems and their devotion to the welfare of the whole community, a comparison which is unparalleled by an analogy.

The student should learn to think embryologically and, if he becomes a surgeon, to consider with astonishment nature's errors in her developmental operations. To understand such things as the bewildering foldings of the peritoneum or the obscure formation of the nasal air sinuses one must consider their early development and growth. In this way also one readily understands the cause of many congenital deformities and minor variations. You will be surprised later to learn how many medical conditions have as their base an arrest of development or a weakness in the process of development. Embryology will teach that each individual begins in the ovum with a certain potential of energy which, as development continues, is distributed among the various cells as they become differentiated into tissues and organs; that distribution of energy unfortunately is not always equitable, so that there result certain weak spots in our makeup through which we usually break down or where we are invaded by disease.

PRACTICAL METHODS OF STUDY

The most deplorable sight that can greet the teacher's eye is that of two students, one vociferously reading from a manual, the other unheedingly scratching away with a blunt scalpel; at intervals one will look at the number of pages that remain of his self-allotted score for the day, the other will glance at the clock. Both think they are studying anatomy. Whitnall advises them how to use the time more profitably.

Do not slavishly follow your books, expecting to find everything just as it is described, for there is no such thing as an anatomic "normal type." The student must compare the written statements with what he actually discovers and learns from seeing with his eyes. Textbooks are too often held sacred; many descriptions have been handed down through generations of books while their incorrectness is overlooked by thousands of patient dissectors. The most common position of the appendix, for example, was only recently established by statistics as retrocecal. Conduct your dissection, therefore, in a spirit of investigation and cultivate independent powers of observation and inquiry. It is a pernicious habit to ask for information on any question before bringing one's own judgment to bear on it. The gift of observation should receive its fullest cultivation in the anatomy department, and the student who sees only what is pointed out to him will be spoiled for the practice of medicine. Learn to think and decide for yourself; form the habit of making quick, not hasty decisions in small matters as preparations for great ones. In the second place, learn big things rather than details. Larger structures as a rule are more important than the small ones, yet this fact is constantly forgotten, possibly because big things are so obvious that they are overlooked. It is more useful to know that the cricothyroid ligament lies below the level of the vocal cords, where a foreign body might lodge, than to be able to write a detailed description of the arytenoid cartilages. The student's own judgment should enable him to realize the prime importance of studying things like the skull and to surmise that details of the various articulations of the cranial bones are unnecessary for future practice. Indeed, if a student is so fortunate as to be able to dissect the body twice, he should concentrate the first time on the big things. As a stranger in town you would naturally explore the main streets and buildings and later connect the minor ones with them. The connections of the hypothalamus are very important in the eyes of a Cushing, as is the complex nerve supply to the heart to a McKenzie, but those minutiae must not matter to the medical student being initiated into anatomy.

Do not depend on a mnemonic when you can reason out the facts from what is supplied. Why think of TAN to recall the relative positions of the biceps tendon, brachial artery and median nerve in the bend of the elbow when you already have marked them out in dissecting the upper arm? More will be gained by expending efforts in tracing the derivation and meaning of such words as cremaster, cricoid, ethmoid, glenoid, iris, pylorus, splenius, vomer, arytenoid and arachnoid, which, Whitnall says, mean respec-

tively "suspender, ringlike, sievelike, shallow, rainbow, gate keeper, bandage, ploughshare, ladle-like cobweb-like."

In the next place anatomy must be absorbed slowly. It cannot be retained at the first time of study but must be frequently revised, and for this purpose Johnston's Synopsis of Regional Anatomy, which is a review of what you must absolutely know, is recommended. When you come back for the next period of dissecting, go over everything you did the last time before you begin work again. You cannot possibly absorb in a short time even the main new facts which must be presented. It has been said that half of the new matter presented is forgotten in the first half hour, two thirds in nine hours, three fourths after six days and four fifths after a month—a devastating statement if universally applicable.

KEEP A STROP AT HAND

As soon as the student gets to actual dissection he should realize that one of the most useful things is to train the eye and hand in the dexterous use of instruments. He will be utterly void of any definite manual skill unless it is acquired by practice. Take pride in dissecting methodically to display the structures in their clearest outline. A good dissection should afford a student as much satisfaction as a good drawing. The scalpels must be sharp; use a large curved one for cutting tough skin, another for the main work, and a small straight blade for the finer dissection. Keep a strop at hand to whet the knives. When using the hone, keep the blade flat on it, not at an angle. For the rest you need only a pair of broad and easily closing, but perfectly meeting, forceps and your fingers, although sharp scissors, probes, chained hooks, needles and pins can at times be of assistance. Moisten the parts with water in dissecting away fascia, and at the end of a period of work carefully wrap up your dissection to preserve it properly. Devote more attention now to the exquisite care of your hands and nails, not only in preparation for the future patient, but to learn the preoperative surgical ritual. After making the dissection, the second and very important part is to study it. Therefore, rearrange the parts in their natural order and study the composition of the picture you have revealed, using every means to form a permanent mental impression, for anatomy is learned not by the ear alone but by the practicing eye and hand.

PRACTICAL SUGGESTIONS

Recite to some one or to yourself how you would describe what you see, following the dissection with your fingers. Next draw your dissection, for in no other way are the details impressed on the memory so accurately. Take every opportunity to see other students' dissections to learn how structures vary. When operating on the living, you will not enjoy an extensive display of things as now, and so learn to identify a structure readily when it is only partly exposed or can only be felt. A good practice is to form window views by circumscribing with a torn sheet of paper or with the hands a restricted area of the finished dissection, especially one which includes a main artery. Learn to tell a muscle, tendon, vessel or nerve from its direction, relations and feeling.

SURFACE ANATOMY

Whitnall strongly emphasizes the value of knowing surface anatomy. Many a student first recognizes its importance only when brought to the bedside to find that the first thing he is faced with is the one that he has least considered. Learn to map out the anterior border of the lungs on the chest wall. From mere inspection of the surface form it is possible to tell the position and often the condition of many hidden parts.

CARDINAL RULES

Two cardinal rules of living anatomy are (1) Look before you feel, (2) examine both sides; in the case of injury to the shoulder, for example, it is well to examine the sound side first. Note the bones, which are the best landmarks, and learn where their prominences lie beneath the skin and can be felt. Make a thorough survey of the whole body on such lines, especially in the neighborhood of joints. It is more useful to verify that the posterior border of the ulna is just beneath the skin and can be felt in life throughout its whole length, and so is easily injured, than to be able to map the exact origins of the muscles on the back of the forearm. Consider how much of the base of the skull can be examined in life. Consider what the advantages and disadvantages are when vessels run on the flexor aspect of joints and in the provision of both deep and superficial sets of veins.

THE VISCERA

Now study the position of the viscera in relation to the surface of the body. Consider how posture affects the position and relations of organs. Reflect on the effect of gravity on the viscera, for "against gravity we fight in every movement of our limbs; it is the indomitable force that defeats us in the end, that lays us on our deathbed, that lowers us to the grave."

In studying surface anatomy, one can thus study the expression not merely of bodily processes but of personality. An obvious feature is the adenoid nose, slight frowning when reading may portray errors of refraction in the eye; malnutrition may be indicated by wrinkled skin

or gaunt eyes; a blank face may portray deafness. A slight drooping of the eyelid may indicate malaise or mental fatigue. Go a step further and deeply regard that the living body has a mind which will certainly be affected by ill health, by blood stream or by belief. Consider the reactions, in sorrow and sickness, of the mind—that is psychology, which bears the same relation to the mind that physiology does to the body.

SUMMARY

In summary: Know the body rather than the book; learn big things rather than details; anatomy must be absorbed slowly; dissect carefully and keep the knife sharp; then study your preparation; describe what you see; draw your dissection and see that of others; form window views, and study cross sections. End where you started from—the exterior— and *study surface anatomy.*

Correspondence

THE ADVISABILITY OF EXTRACURRICULAR ACTIVITIES IN THE MEDICAL SCHOOL

To the Editor:—The young man or woman in medical school is faced with many more difficulties than are enumerated in the curriculum. The plunge into study too often results in the student's losing contact with lay ideas. The newcomer to the profession finds his chosen field beset with the specters of an overcrowded profession, "patent medicine" therapeutics and a superpaternal attitude on the part of the government.

Efforts to remedy this situation by the individual medical student are highly laudable, but how much better this task could be done by a systematic, united pursuance of extracurricular activities by the entire student body at the medical school.

It behooves one to consider what types of expression the student can indulge in, never forgetting the danger of overzealousness and its disastrous effects on the primary aim of the school of medicine. The *raison d'être* of the medical student must be kept at a sufficiently high level to permit no conflict with the secondary indulgence in extracurricular activities. However, the medical school seems to have the situation well in hand as regards its purpose in the educational sphere. It was the late Dr. Harvey Cushing who said that no medical faculty ever permitted a free hour in the schedule because, like nature, it abhors a vacuum!

No attempt is made here to outline completely the possible streams of activity for the nonmedical trends of the student of medicine. This exposition may serve, however, to stimulate a more well rounded evaluation of the problem.

The following classification is divided into two principal subdivisions—the mental and the physical phases of extracurricular activity. Justification for the inclusion of the athletic scope of endeavor rests on a belief that medical students are sorely in need of organized and supervised exercise. The old aphorism of "mens sana in corpore sano" finds its greatest need in the student of medicine, whose hours of study are time consuming and permit of little physical activity.

SUGGESTED PLAN FOR EXTRACURRICULAR ACTIVITIES

Mental.—A. Theater Parties: Organized excursions to plays of proven merit or controversial themes. Groups will find theater managers amenable to quoting a cut rate for large parties.

B. Guest Speakers: On current topics and problems relating to the practice of medicine which are not considered in the school curriculum.

C. Musical Groups: 1. Attendance at recitals or concerts in organized groups. 2. Formation of performing groups, both vocal and orchestral. In this respect, the publicity recently given to the doctors' symphony orchestra in New York, while not within the scope of the individual medical school, indicates a worth while trend in extracurricular activity.

D. History of Medicine: Guest speakers or seminar reports. Even when a course on this subject is given at the school this activity will be found to be a valuable supplement to the curriculum.

E. Literary Groups: Discussions of the leading books of the day.

F. Chess and Checkers Club.

Physical.—A. Gymnasium Classes.

B. Softball: Interclass and interfraternity games.

C. Basketball: On same basis as softball games.

D. Hiking and Picnicking Groups: This when the environs make it possible.

SIDNEY M. SHNITTKE, '40,
Louisiana State University School of Medicine, New Orleans.

The Average Medical Student

It has been charged by many that the average medical student leaves school with little power for growth. For years he is directed to a different room for every hour of the day, along with others, all in the hope that he may one day recognize a disease because he has seen it before. Then years later he stands much where he did at the time of graduation because those who taught him, or the course prepared for him to pursue, failed to remember that one day he must reason problems out for himself. Without the perpetual activity of a disciplined mind, he must fall victim to every passing fashion and must live among the credulous. He may trust neither his industry nor his capacity. New departures are presented and incorporated in his studies with bewildering haste, while with great reluctance much that he has learned slowly is swept away by discredit and disuse. The way of escape alone remains that we recognize in theory and practice that the young physician be trained not only in the observation of facts but also in the habits of handling them; in methods of reasoning which alone supply any solution to the problem of his professional life.—Black, B. W.: Community Aspects of Medicine, *J. A. Am. M. Coll.* **13**:19 (Jan.) 1938.

Medical College News

Medical schools, hospitals and individuals will confer a favor by sending to these headquarters original contributions, reviews and news items to be considered for publication in the Student Section.

"The Lad from Labrador"

Forty members of the senior class at the Long Island College of Medicine, Brooklyn, have been cast in a play entitled "The Lad from Labrador," by William Paddon, whose father Dr. Harry L. Paddon, until his recent death, had been the active head of the Grenfell Mission in Labrador. This play will be produced soon in the auditorium of the Brooklyn State Hospital. The forecast appears so promising that some members of the class have suggested putting on also some Broadway performances, as the Mask and Wig Club of the University of Pennsylvania do each year. Senior student Paddon, after finishing his training at St. Luke's Hospital, New York, expects to return to the Mission in Labrador to carry on where his father left off.

Harvard Awards Student Fellowships

Harvard University has announced the award of fourteen Harvard Medical School fellowships for the 1940-1941 academic year, totaling $8,650; among others were the DeLamar Student Research Fellowship to William R. Christensen '42, of Salt Lake City; Henry S. Fuller '41, of Washington, D. C.; John W. Kirklin '42, of Rochester, Minn., and Irving M. London '43, of Malden, Mass.; also the Charles Eliot Ware Memorial Fellowship to Herbert R. Morgan '42, of Bell, Calif.; the George Cheyne Shattuck Memorial Fellowship to Thomas H. Weller '40, of Ann Arbor, Mich.; the John Ware Memorial Fellowship to Joseph M. Foley '41, of Dorchester, Mass.; also the James J. Cabot Fellowship to Hubert W. Smith '41, of Dallas, Texas, and the Dr. William Hunter Workman Fellowship to Nathaniel B. Kurnick '40, of Brooklyn.

Prizes at Temple University

Temple University School of Medicine, Philadelphia, has at least sixteen prizes of various kinds to be awarded to undergraduate students. The Faculty Prize, for example, is a gold medal awarded to the member of the graduating class attaining the highest average during the four years' course. The most recent award of this prize was to Henry T. Wycis, who also was awarded the Alumni Prize of $25, the Rhino-Laryngology Prize for passing the best examination in rhinolaryngology, and the Internal Medicine Prize for the highest combined average grade in the department of internal medicine for the junior and senior years. Among some of the other prizes available for awards are the Gynecology Prize, the Surgery Prize, the Urology Prize and similar prizes in various other departments.

"Information Please"

A contest between selected students of Rush Medical College and the University of Illinois College of Medicine in Chicago has been planned along the lines of the well known radio program "Information Please." The method of selecting the contestants from the University of Illinois College of Medicine, the *Illini Scope* announces, will as far as possible not be based merely on scholarship at the school "but also on worldly knowledge," and any student who feels himself qualified is requested to deposit his name in the "*Scope*" box in room 113.

Faculty-Student Luncheons

For three years the Medical Students' Club has sponsored faculty-student luncheons at New York Medical College and Flower-Fifth Avenue Hospitals, New York, at which once a week six first year students, six second year students and a faculty adviser for each of these two groups meet for lunch. The Medical Students' Club is a unit of the Intercollegiate Branch of the Y. M. C. A. and is responsible for making the arrangements of this social occasion, where students become acquainted with their fellow students as well as with members of their faculty. John F. Schlechter Jr., of the class of 1941, writes that these meetings are of much value, as they allow for a relationship between faculty and student that is difficult to arrange through other facilities, and contribute to the well-being of the college community.

Louisiana Students Serve Relief Patients

Louisiana State University School of Medicine in New Orleans has announced the establishment of a visiting medical service for teaching purposes in cooperation with the Department of Public Welfare of Orleans Parish. Students will supply the medical services to clients on relief, but they will be accompanied on every visit by an instructor. Calls for medical service will be relayed to one of three field instructors—Drs. Edgar Hull, Chester S. Fresh and Richard T. Stephenson—who in company with the medical student assigned to the case will see the patient. The director of the service, Dr. Hull, will visit acutely ill patients whose recovery seems delayed, and at intervals, the chronically ill patients. He will review each month the bedside notes and prescriptions issued to these patients. The school of medicine will supply consultants when needed and furnish the laboratory service.

Western Reserve Supplies Cleveland

Clevelanders are not generally cognizant of the fact that 43 per cent of its physicians were trained at Western Reserve University; also 73 per cent of its dentists, 38 per cent of its attorneys and 82 per cent of its pharmacists. They are too often unaware, also, of the fact that Western Reserve University is composed of thirteen colleges operating sixty-four buildings on 380 acres of land and that it instructs more than 11,000 students each year. A Western Reserve University alumni dinner is to be held at the Hotel Carter, May 8, to which the students as well as the faculty members and alumni and their wives and intimate friends have been invited to hear a speaker of national prominence. Among those on the committee arranging for the dinner is Harry D. Piercy '15, 10515 Carnegie Avenue, Cleveland. Like most other universities, the cost of instruction at Western Reserve University last year exceeded the income from student fees by $15,559. For the present year there is an anticipated gap of about $292,639 between the income from student fees, investments, sales of services, grants and the like and the cost of operating Western Reserve University. The university will hold an open house, Friday, April 12, from 2 to 11 p. m., during which time there will be exhibits, demonstrations and inspection of the buildings to which students, teachers, parents, alumni and friends are invited.

Award to Fourth Year Student

An annual award of $50 has just been established by Mrs. George S. Bel as a memorial to her husband, the late Dr. Bel, who had been director of the department of medicine at Louisiana State University School of Medicine, New Orleans, for many years. In making the award, Mrs. Bel stipulated that it be presented to the fourth year medical student who symbolized the highest ideals of medicine; she listed as attributes which Dr. Bel had considered essential in the good physician "scientific interest, ethics, personality, tact, bedside manner, ability to handle people, kindness to patients, an aim to serve humanity rather than mercenary ambitions, and clinical ability." The winning student is to be selected from the ten highest ranking students in the fourth year class after they have been listed in order of preference by a representative committee of the general faculty, headed by the dean of the school and chairman of the executive committee. The award will be presented for the first time at the end of the current school session.

The Oldest Medical School in America

The University of Pennsylvania, Philadelphia, celebrates its two hundredth anniversary in 1940. In recognition of this event, the students of the medical school have published a volume in the form of their annual yearbook, which contains histories of the Pennsylvania Hospital and the Philadelphia General Hospital and of the university itself. They have also reconstructed the history of the medical school by the individual departments, illustrated with scenes taken in the laboratories, classrooms and wards. They have included the history of each medical fraternity and society, with brief accounts of the Philadelphia College of Physicians and of the Henry Phipps Institute. The University of Pennsylvania School of Medicine, founded by Drs. John Morgan and William Shippin in 1765, is the oldest medical school in America. Closely related to this institution are the two oldest hospitals in America, the Pennsylvania Hospital, founded in 1751, and the Philadelphia General Hospital, which began as an infirmary to the Almhouse in 1731. In the wards of these two hospitals, as well as in the University Hospital, the students at this school get their training.

Tea at the Dean's Home

Dr. Jean A. Curran, dean of the Long Island College of Medicine, Brooklyn, and Mrs. Curran continue to entertain the underclassmen at informal teas at their home. The entire sophomore class, who had been entertained in groups in their freshman year, had a reunion at the dean's residence recently, and since then small groups of the freshman class have been invited on Friday afternoons for coffee and doughnuts and a chance to talk with members of the faculty who drop in on these informal occasions.

Books for Medical Students

In the book review columns in this issue of THE JOURNAL, beginning on page 1103, are several reviews of books which appear to be especially useful for medical students. These books are:

Human Histology: A Guide for Medical Students. By E. R. A. Cooper.
The Tissues of the Body: An Introduction to the Study of Anatomy. By W. E. LeGros Clark.
Handbook of Bacteriology for Students and Practitioners of Medicine. By Joseph W. Bigger.
A Laboratory Guide to Microscopic Anatomy with Directions for Laboratory Studies in Cytology, Histology, Organology, and Embryology. By Rafael Hernandez.
Outline of Physiology. By William R. Amberson.
An Introduction to Human Anatomy. By Clyde Marshall.
A Synopsis of Regional Anatomy. By T. B. Johnston.
Synopsis of Pediatrics. By John Zahorsky.

Annual Meeting of Honorary Society

The third annual meeting of Tufts College Medical Honorary Society was held January 17 at the University Club, Boston, when the annual prize of $100 for being most proficient in his studies at the completion of the third year term was presented to senior student Stanley L. Robbins. The selection of the winner is made by the medical faculty and the scholarship committee of the honorary society. The presentation was made by Dr. Louis Feldman. Dr. William Osler Abbott, Philadelphia, lectured on "Intestinal Indigestion and Its Differential Diagnosis." The toastmaster was Dr. Frederick W. O'Brien, professor of radiology. The Executive Board of the honorary society sponsored a postgraduate clinic in the Pratt Diagnostic Hospital at the New England Medical Center. Tufts College Honorary Medical Society, organized Sept. 4, 1938, aims to stimulate high scholastic standing and greater interest in research, to establish a scholastic fund and to give honorary recognition to prominent Tufts graduates.

Duke University

A department of psychiatry and mental hygiene has been established at Duke University School of Medicine, Durham, N. C., through the generosity of the Rockefeller Foundation, which granted $175,000 for this purpose. The new department will begin operating September 1 under the direction of Dr. Richard S. Lyman, now of the Phipps Psychiatric Clinic, Johns Hopkins University.——The following clinics for students were held recently: Dr. Samuel A. Vest Jr., professor of urology, Medical College of Virginia, Richmond, on "Testosterone Therapy in Hypogenitalism"; Dr. John M. T. Finney Jr., associate in surgery at Johns Hopkins University School of Medicine, on "Appendicitis," and Dr. Thomas Francis Jr., professor of bacteriology, Bellevue Hospital Medical College, New York, on "Influenza."

Prize for Interns and Residents

Interns, residents, graduate students in obstetrics, gynecology and abdominal surgery, and physicians actively practicing or teaching those subjects are eligible for the annual Foundation Prize of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons, which this year amounts to $150. The prize-winning thesis must be presented at the next annual meeting of this association in September without expense to the association and in conformity with its regulations. Manuscripts must be presented in triplicate and be triple spaced on one side of the paper, under a nom-de-plume, to the secretary of the association, Dr. James R. Bloss, 418 Eleventh Street, Huntington, W. Va., before June 1. Manuscripts are limited to 5,000 words and sufficient illustrations necessary for a clear exposition of the thesis.

Award of Henry A. Christian Prize

Harvard University announced, February 16, the award of the Henry Asbury Christian Prize to John G. Scannell '40, of Jamaica Plain, Mass. The prize, one of the important honors of the medical school, is awarded to "the student in the fourth year class who has displayed diligence and notable scholarship and offers promise for the future."

Mr. Scannell graduated from Harvard College with honors in history in 1936; as an undergraduate he was manager of the swimming team, editor of the *Harvard Lampoon*, editor of the *Freshman Redbook* and a member of the Speakers' Club. At the medical school he is a member of the Lancet Club, of Alpha

Omega Alpha, honorary society in medicine, and of the Boylston Medical Society. He is the son of Dr. David D. Scannell, honor graduate from Harvard College in 1897 and from Harvard Medical School in 1900.

Lectures to Michigan Students

Dr. Francis G. Benedict, formerly director of the nutrition laboratory of Carnegie Institute, addressed the students of the University of Michigan Medical School, February 21, on "The Future of Basal Metabolism." The students of this school were also addressed by Dr. Malcolm T. MacEachern, Chicago, associate director of the American College of Surgeons, on "The Role of the Hospital in Graduate Education for the Physician or Surgeon Desirous of Proper Preparation for His Specialty."——The students of the University of Michigan Medical School, Ann Arbor, and the dietetic staff of the University Hospital were addressed, February 12, by Dr. John W. Riegel, professor of industrial relations and director of the bureau of industrial relations of the University of Michigan, on "Personnel Relationships."

Prizes Awarded at Columbia

Donald G. Anderson, class of 1939, was awarded the Janeway Prize at Columbia University College of Physicians and Surgeons, New York, which is given to the member of the graduating class ranking highest in efficiency and ability. The William Perry Watson Prize, awarded for outstanding work in the study of diseases of children, was awarded to Henry D. Janowitz. The Thomas F. Cock Prize, for a thesis on "Puerperal Morbidity in Relation to Certain Methods of Induction of Labor," was awarded to Harold G. Bergen. Stanley I. Glickman of the second year class was awarded the Harold Lee Meierhof award for "conspicuous effort in pathology."

Expenses at the University of Virginia

The fees for instruction at the University of Virginia Department of Medicine, Charlottesville, for the first year are: tuition fee (Virginians) $310, (non-Virginians) $360; library fee $20, health service fee $15; athletic fee $15; college topics fee $1.50, and laboratory fees in various departments, making a total for the fees of instruction for a year for Virginians $414, and for non-Virginians $464. In addition, the minimum for necessary living expenses, including room, heat, light, furniture, board and laundry, is estimated at $400.

Medical College of Virginia

As a part of the program of expansion of the course in industrial health in the Medical College of Virginia, Richmond, Dr. G. H. Ghermann, medical director of the E. I. DuPont de Nemours Company, and Dr. John H. Foulger, director of the Haskell Laboratory of Industrial Toxicology of the DuPont Company, have been appointed associate professors of industrial health to give special lectures. The initial lecture of a lectureship recently established by Phi Beta Pi medical fraternity at the Medical College of Virginia was given by L. B. Arey, Ph.D., of Northwestern University Medical School, Chicago, March 16, on "Wound Healing."

New York Seniors Meet with Alumni

An informal meeting has been arranged for April 5 between members of the senior class of the New York University College of Medicine and a group of alumni representing the faculty and the alumni association. The purpose of the meeting will be to acquaint the senior class with the activities of the association and to discuss their participation in this work after graduation. Dean Currier McEwen '26 will speak for the faculty, Dr. James W. Smith '17, as president of the alumni association, Dr. George G. Ornstein '15, as vice chairman of the Alumni Fund Committee, and Mr. George C. Beekman, as president of the senior class. Dr. Nathan B. Van Etten '90, President-Elect of the American Medical Association, has been invited to the meeting.

Policy of Association of Medical Students

At the fourth National Convention of the Association of Medical Students in Detroit last December, the following permanent policy of the Association of Medical Students was adopted:

"Objects: This association shall concern itself with the ethical, social, humanistic, and, educational aspects of medicine, in order that its members may be better equipped to serve themselves, their profession, and society."

(Constitution, Art. 1, Sec. 2.)

". . . To serve themselves . . ."

Since the Association of Medical Students lives and grows best where it sends down deep roots of service into the lives of medical students, it achieves its highest purpose as a service organization, by:

(1) enriching their educational and cultural life;
(2) protecting student health, through aiding in the establishment of adequate health services, housing and eating facilities, and social and recreational opportunities;
(3) working toward the adoption of a uniform date of internship appointment, standardization of internship examinations, adequate remuneration for interns, and, compensation in case of sickness or injury;
(4) aiding in the establishment of scholarships, student loan funds, and other methods of meeting the problem of the tremendous cost of medical education; and by
(5) fostering a closer understanding between faculty and students.

". . . To serve . . . their profession . . ."

By helping in the maintainence of high standards of medical practice, through:

(1) hearty support of the organized profession and of medical educators in their well known efforts to continue to raise the standards of medical schools;
(2) intelligent cooperation with the faculty in dealing with the problems of the curriculum;
(3) aiding in every way possible the constant endeavor of the medical profession to maintain its reputation for fairness and scientific accuracy and to preserve the unity within its ranks; and
(4) working towards the establishment of equal opportunities for members and prospective members of the profession solely on the basis of individual merit, in accord with the fundamental American principles of democracy and freedom of opportunity, without regard for race, creed, sex, marital status, or other considerations.

". . . To serve . . . society . . ."

Recognizing that the health of its people is the nation's greatest resource, and, that it is the right of all individuals to receive the best that medical science has to offer, the A. M. S. is dedicated to the raising of the level of the general health of the nation by cooperating with and urging the medical profession and recognized public agencies to take the lead in determining the nature and direction of programs—both legislative and educational—most in keeping with the best interests of the public and profession, and designed:

(1) to provide more nearly adequate medical care for all the people and extend the services of public health and preventive medicine;
(2) to effect the exposure and ultimate annihilation of such serious threats to the scientific practice of medicine and of such menaces to the health of the nation as the propaganda of quacks, pseudo-medical cults and anti-vivisectionist movement, the policies of unscrupulous patent medicine manufacturers, unethical pharmaceutical and surgical supply houses; and
(3) to acquaint the lay public with its potential role in raising the level of the general health of the nation.

". . . Firm stand . . . for peace . . ."

Recognizing that war is inimical to the ideals of our profession because it destroys and dishonors life, increases human suffering and stifles science and culture, and that any local or national program embarked on by the A. M. S. is secondary to and dependent on the preservation of peace and democracy, just as is medical practice and research in general, the A. M. S. takes a firm stand for the establishment and preservation of peace.

Lectures to Upper Classmen

The junior and senior classes of both Louisiana State University School of Medicine and Tulane University of Louisiana School of Medicine met in the Tulane Auditorium at Hutchinson Memorial, February 27, to be addressed by Dr. Eldridge L. Eliason, professor of surgery at the University of Pennsylvania School of Medicine, on "The Patient and His Fracture." On the previous day, February 26, the juniors and seniors of Louisiana State University School of Medicine met at the New Charity Hospital to be addressed by Dr. William J. Dieckmann, associate professor of obstetrics and gynecology, University of Chicago, on "Toxemias of Pregnancy." The speakers on these occasions were introduced respectively by Dr. Urban Maes, professor of surgery, and Dr. Philips J. Carter, professor of obstetrics and gynecology at Louisiana State University School of Medicine.

College of Medical Evangelists

The dean of the Loma-Linda Division of the College of Medical Evangelists has reported a total of 409 students enrolled in the medical school, including seventy-five freshmen, representing twenty-three states, the District of Columbia, Hawaii and eight foreign countries. The most important improvement in the last year has been the new physiology building. It is planned to build a new men's dormitory, replacing the hospital building which now houses male students. Recreation facilities for the students have been grouped together across Stewart Street to the north from the campus. Some of the needs which the dean mentioned are additional teachers, and dispensary and library facilities.

Scholarship for Jewish Student

Applications are being received at the University of Illinois College of Medicine, Chicago, for the Theodore B. Schnitzer Memorial Scholarship of $100, which is awarded each year to some Jewish student who has completed at least one year's work in the college of medicine and who is in the upper scholastic half of his class and is needy. Application blanks may be secured at the administration office of the college of medicine.

Medals and Prizes at Georgetown University

Following are some of the awards made at Georgetown University School of Medicine, Washington, D. C.:

The Baker Memorial Medal. To a student who has achieved the highest record in anatomy, a gold medal is awarded annually.

The Kober Medal in Hygiene. A gold medal is awarded each year to a member of the senior class who has attained the highest average in the course in hygiene and whose record in his other studies is creditable.

The Hird Prize in Physiological Chemistry. A prize of $35 is awarded to the student who achieves the highest grade in physiologic chemistry.

Physiologic chemistry prizes. An award of $25 and one of $15 will be made to the two members of the first year class who achieve, respectively, the second and third highest grades in physiologic chemistry.

The Ewing and MacCallum Prizes in Pathology. These prizes are awarded annually to the two students receiving the highest grades in pathology.

Scholarships at Howard University College of Medicine

Following are some of the scholarships available at Howard University College of Medicine, Washington, D. C.:

The George B. Cabaniss Medical Scholarship. Awarded annually on a basis of good scholarship and of need.

The John R. Francis Medical Scholarship. Awarded annually on a basis of good scholarship and of need.

University scholarships are awarded in amounts varying from $125 to $250. Each is made annually to a medical student who has maintained a high average scholarship and who is in need of financial aid.

Chemist Lectures at Tulane

Dr. Samuel C. Lind, president of the American Chemical Society, editor of the *Journal of Physical Chemistry* and director of the chemical laboratories at the University of Minnesota, addressed the students at Tulane University, New Orleans, January 31, on "Radium, Its Production, Uses and Dangers." The lecture was preceded by a dinner and was followed by an informal reception attended by members of the faculty and others.

Scholarships at Syracuse University

Following are some of the scholarships open to students at Syracuse University College of Medicine, Syracuse, N. Y.:

The Dr. Menzo W. Herriman Scholarship is awarded annually to the senior deemed most deserving of financial aid, selected from among the five students highest in rank at the end of the junior year.

The Dr. John L. Heffron Scholarship is awarded annually to the senior whose work during the three previous years has shown him to have a special aptitude for medicine.

The Clara L. Groff Scholarship is awarded annually to a deserving student with limited financial resources.

The local chapter of Alpha Omega Alpha annually awards a scholarship to a senior student who is selected by the officers of the local chapter on the basis of accomplishment and promise. An annual prize is also offered by this chapter to the senior or junior who presents the best paper on a medical subject involving original observation.

Fifty-Three Harvard Students Receive Awards

Harvard University announced October 1 that awards totaling $18,890 had been made to fifty-three students in the Harvard University Medical School, Boston, for the current academic year.

Medical College of Virginia

Exercises for the opening of the one hundred and second session of the Medical College of Virginia were held at the Old First Baptist Church, Richmond, September 18. The principal address was given by Col. E. W. Clark, acting commissioner of public works of the Public Works Administration, following which the cornerstone was laid for the new $2,000,000 hospital. The enrolment at the Medical College of Virginia for the current year is 303 in medicine, 139 in dentistry, 112 in pharmacy and 141 in nursing, a total of 695. The Public Works Administration has approved a supplemental grant amounting to $123,056 for the new hospital.

Prizes Awarded at Washington University

At the recent annual commencement of Washington University School of Medicine, St. Louis, final honors at the school were awarded to Joseph Borenstine, Harry B. Campbell, Charles L. Eckert, Leo J. Geppert, Robert M. Hardaway III, Herman F. Inderlied, Darwin W. Neubauer, Edward H. Reinhard, Robert E. Shank, Arnold DeM. Welch and Ernest Zander.

Charles B. Mueller, '42, was awarded the George F. Gill Prize in Anatomy; Charles R. Anderson, '39, the George F. Gill Prize in Pediatrics, and Darwin W. Neubauer, '39, the Alpha Omega Alpha Book Prize.

The following students were awarded various scholarships: Roy E. Ahrens Jr., William M. Anderson, Parker R. Beamer, Grace Bergner, Frank A. Brown Jr., Edward Dunn, Jane Erganian, Sam Gollub, Charles M. Huguley, Leon Kahn, Gordon S. Letterman, Sam Levy, Frances Love, Allyn McDowell, Kent McQueen, Charles R. Mueller, James A. Read, William G. Reese, Helen Reller, Ernest Rouse, Llewellyn Sale Jr., Philip T. Shahan, Vergil Slee, Earl Sutherland, Gordon Todd, Souther Tompkins and Martin S. Withers.

Equipment Required at Minnesota

Each medical student at the University of Minnesota Medical School, Minneapolis, must be provided throughout the entire four year course with a microscope of approved quality and equipment. For the junior and senior years each student is required to provide himself with a hemocytometer, a head mirror and a stethoscope of approved form.

William Harvey Society

The William Harvey Society, which is one of the activities to which the Student Activity Plan at Tufts College Medical School, Boston, gives counsel and financial aid, met February 9, at Beth-Israel Hospital, Boston, when Dr. Alfred N. Richards, professor of pharmacology, University of Pennsylvania School of Medicine, Philadelphia, spoke on "Kidney Function." A previous meeting of this society was held January 12, when Dr. Stanhope Bayne-Jones gave an address on "The Relation of Viruses to Cancer—A Review."

Annual Prize for Interns

The Massachusetts Medical Society has offered a $50 prize for the best written and most comprehensive case report submitted by one of their number holding an internship in any Massachusetts hospital approved by the American Medical Association for intern training during 1938-1940. The typewritten case report must be sealed, unsigned, in a plain envelope which in turn is to be placed, together with a separate slip bearing the name and address of the contestant, in a larger envelope and sent to the Committee on Medical Education and Medical Diplomas, Massachusetts Medical Society, 7 Fenway, Boston. Reports may be submitted at any time prior to May 5.

Lecture to Juniors and Seniors

The junior and senior classes of Louisiana State University School of Medicine, New Orleans, were addressed, January 20, by Dr. J. Deryl Hart, professor of surgery at Duke University School of Medicine, Durham, N. C., on the clinical and pathologic features of benign neoplasms of the parathyroid glands. Dr. Hart was presented to the assembly by Dr. Urban Maes, director of the department of surgery.

London Medical Students and the War

According to the *British Medical Journal*, February 17, there is a greater concentration of students now in London than was the case a few months ago. A complete resumption of the normal program at the hospitals in London is not possible so long as hospitals are compelled to reserve one third of their beds for civilian casualities, for the remaining beds would not be sufficient in all cases to provide clinical material for the students who would normally be in attendance. For example, at the University College Hospital the arrangements for the summer term depend on whether further beds are opened at the center; if they are not opened the new entry of clerks and dressers will be taught at the periphery, at what used to be Leavesden Mental Hospital, and will come into the center for their second and third clinical years. The October entry of University College Hospital students went to Cardiff and will stay there until they come back to London next October for their second year. The London School of Medicine for Women has 163 clinical students working in London and only nineteen at its two associated hospitals in Hertfordshire; but at one of those country hospitals it is expected that many more beds will be open in the future, and in that case it is more likely that a larger proportion of students will be working there instead of in Gray's Inn Road. The preclinical students of the metropolitan schools are for the most part remaining in the provinces, though the Middlesex contingent has returned to London from Bristol. But a strong intention is expressed in several quarters to have the preclinical students back for the next autumn term unless, of course, air raids on London develop on such a scale as to make that course inadvisable. In general, as the outpatient and other services resume their normal aspect, the dispersive movement will be reversed.

At St. Bartholomew's, the students who were originally living in small outlying hospitals have all been drawn into three hospitals, the biggest proportion being at Bart's itself. While the students have their teaching spread out under a greater number of teachers, the arrangement has the advantage that some of the teachers are actually living in the outlying hospitals, so that there is much closer contact between them and the students than in peace time. On the other hand, the transfer of a number of consultants in the Emergency Medical Service from whole time to part time engagements has reinforced the teaching staffs available in London.

Bart's is not running any teams as it does in peace time, but the London Hospital is reestablishing the medical professorial unit, and there are to be three medical teams each under the charge of two honorary physicians, and three surgical teams each under two honorary surgeons; also the aural team, the cardiac department, with beds, and the department of obstetrics and gynecology. The outpatient departments and clinics, including the maternity district of the London Hospital, are nearly at their prewar level. Junior clinical students will spend their first twelve months in the hospital, working for six months in the wards and then three months in the special departments, after which they will take a course in pathology, the teaching of which has been centralized at the parent institution. After instruction in anesthetics and in obstetrics and gynecology it is considered that they will be senior enough to be attached for six months to one of the associated municipal hospitals, afterward returning to the London Hospital to attend the outpatient departments and for revision work preparatory to their finals.

The statement of the position at the metropolitan schools illustrates the tendencies, now that the effects of the dispersion are wearing off. Some of the deans, while alive to the disadvantages of having their staffs and students scattered over the breadth of whole counties, feel that much has been gained by the experience and that a certain distribution of students for varying periods over other hospitals in the sector might well form a permanent feature of medical training. One also gathers that, so far as can be foreseen, the entry for next year will be up to the level of last.

Wisconsin Questions in Neurology

The following questions in neurology were given at the examination held in Milwaukee June 27-30, 1939, by the Wisconsin State Board of Medical Examiners: (Answer three)

1. What involvement of the nervous system is most commonly associated with pernicious anemia? What are the signs, symptoms and differential diagnostic features?
2. Name the common causes of peripheral neuritis. Describe the symptoms, physical signs and course of a typical example.
3. A young woman who had always been well except for an attack of chorea in childhood, but who recently had noticed some palpitation and irregularity of the heart and some dyspnea on exertion, awoke one morning to find herself unable to speak or to move her right arm and leg. Within a few hours the speech had returned and by the next day she could move the affected arm and leg. Discuss in detail the cause of the attack of hemiplegia and the sequence of events leading up to it.
4. Spastic paraplegia in a child 3 years of age; give etiology, pathology, treatment and prognosis.